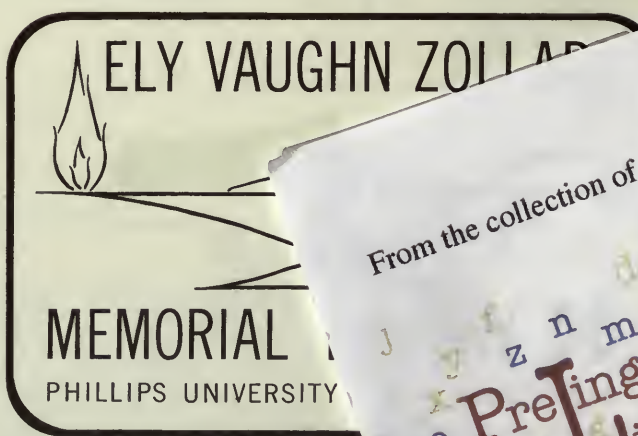


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Community Values in Government Housing

By George Gove

Housing Adviser, American City Bureau

AFTER years of reliance on private enterprise for the satisfaction of all local housing requirements, and a brief episode of government housing, for which some \$110,000,000 was allotted, American industrial communities during a year past have been appealing again to private enterprise to produce more houses. The war-time demand was not so temporary as it promised to be. The emergency has apparently become a permanent condition.

The Permanent Need for Housing

It was imperative to house the workers for war production. It is equally imperative now to house the ever-increasing army crowding into industrial cities and towns for peace-time production. Housing has become the factor which will determine the industrial future of many towns which are now striving to retain those expanding industries whose peace-time output is exceeding their maximum production of a year ago. In the quick readjustment of production after the war there was much moving about of industry. In more than one case inadequate housing and low community standards were primary causes. Within the last six months one of the largest industries in the country has deserted Ohio and has moved into a newly erected plant in Maryland, where ample housing accommodations and satisfactory living conditions are being created for the workers.

That American cities are awake to their

own housing deficiencies is evident in the efforts which chambers of commerce and civic-commercial organizations generally are putting forth to solve the problem. In more than sixty cities definite plans have been announced for meeting the housing shortage. Some of these plans have been carried into execution, and their success or failure can be measured.

Surprisingly few have failed to accomplish what they set out to do. But too few have had sufficient vision to plan comprehensively, and those which planned little achieved little. So far the great failure has been the indecision to plan thru to something worth while.

A properly conceived plan for industrial housing should have sufficient dimension to justify carrying it thru. Any plan which is made to conform to superficial or immediate aspects of a given situation cannot realize much for the future of the community. Immediate needs must be satisfied, but it is of equal importance that the needs of the future be satisfied. Moreover, it is good business judgment to begin with a plan big enough to insure for the housing enterprise the realization of every benefit arising from the investment. Because private enterprise has usually operated on a small scale, it has been unable to do this. To-day, with a reduced speculative profit in the house, the principal safeguard of housing investments must be found in capitalizing the community values created,



THIS VIEW OF A STREET INTERSECTION IN BUCKMAN GIVES

Community Values Created Only by Planning for the Future

For this reason small success has rewarded the efforts of those communities which have been satisfied to provide only for underwriting second mortgage loans. Relying upon the initiative of the workers to buy their own homes, leaving beyond control the elements of land purchase, location, materials of construction and all possibility of consistent development of a self-contained tract or subdivision, such plans at the outset have sacrificed for the sponsors and for the community the opportunity to create and control the values which alone may determine at some future time the stability of the investment.

On the other hand, a consistent measure of success has rewarded those plans which, directed toward the provision of houses to satisfy a known requirement, have been amply financed for the complete development of an integral urban or suburban tract of land. The completion of such housing developments is not retarded until the sale of each house is completed, as is the case with every mortgage underwriting plan. Development proceeds without regard to the ultimate disposition of the houses. If the preliminary inquiry has been thoro, the houses are occupied as soon as completed, and as planned at the outset,

and they are maintained permanently on a rental basis until sold as opportunity is offered. The rapid completion of the project satisfies the emergency requirement, and the intelligent planning of the development as a whole insures to the community and to the investors every community and financial asset for which foresight can provide.

Industrial housing developments of this character are especially worthy of the attention of those communities in which the housing shortage now calls for prompt action. Some hastily improvised plans may well be reconsidered in the light of recently completed developments in which permanent values have been created which may be retained for the future.

The Essentials of the Successful Plan

An examination of any of these enterprises discloses first of all that a comprehensive detailed analysis of the local situation has been made, that, so far as possible, conjecture has been eliminated and all procedure has been determined upon a basis of fact. The plan itself involves:

- Organizing and financing the housing enterprise
- Location of site and purchase of land
- The town planning and engineering
- The design and construction of the houses
- The maintenance of the property

That each of these elements be worked



AN IDEA OF THE TYPE AND ARRANGEMENT OF THE HOUSES

out in detail is essential, and no chamber of commerce or community plan which fails to consider any one of them can have assurance of success. Control of these essentials is justified in the interest of the community, of the tenant or ultimate owner, and of the original investors, whose investment cannot be liquidated in less than ten years and will probably hold for twenty years.

The control of these factors in the development of realty subdivisions by speculative enterprise may be observed in some of the exclusive suburban residential areas surrounding our large cities. For the community now interested in housing industrial workers the Federal Government has created several excellent examples. Several of these were built by the Emergency Fleet Corporation within the area of metropolitan Philadelphia.

Yorkship Village, south of Camden, N. J., is a complete village capable of housing 1,390 families.

Noreg Village, N. J., four miles farther south on the Delaware, contains 400 houses.

Buckman, Sun Village and Sun Hill, in Chester, Pa., are smaller developments, but contain all the features of the larger developments.

These undertakings, now completed, have received high praise. They have also been sharply criticized.

Buckman

Let us go to Buckman, which the Emergency Fleet Corporation considers one of its best developments.

Our first impression of Buckman is its good appearance. It looks inviting. The approach to it follows a slight elevation from the main thoroughfare along clean, well-paved streets of ample width for two-way traffic. The street curves gently and descends over a hill to join a main traffic highway that surrounds the village. The radiating roads are narrower, with wider grass plats in front of the houses, which are set no nearer to those opposite than houses on the principal thoroughfares. From every point we find an attractive picture, a vista. There is no apparent straining for such effects—they are the obvious result of using natural advantages and simple expedients of plotting. The houses, streets and plantings satisfy the eye.

The houses are attractive not only as individual units, but as groups; and the relation of the whole development to its surroundings is pleasant. There is variety, due almost entirely to the orientation and grouping of buildings, for there is but little variation from a few standard types of house plan. Monotony is avoided by simple devices. Here the houses are set close to the street at each end, and in the middle they are set farther back. There they form



AEROPLANE VIEW OF NOREG VILLAGE

three sides of a small rectangle enclosing a recreation center or park. From the standpoint of size, buildings on opposite sides of a street are balanced. The stores are conveniently placed at the confluence of principal streets, at the entrance to the village. We observe how slight changes in trim, in gables and dormers have given individuality and variety to the whole project. Thruout there has been maintained a uniform color tone in which soft shades avoid all suggestion of newness. It seems sure that Buckman has been occupied for a long time, and yet scarcely more than a year ago it was tilled farm land.

At that time another stretch of similar farm land a few miles to the north could be reached only in a boat across a muddy creek. To-day it is Yorkship Village, the largest completed government project.

Yorkship Village

Yorkship Village has a newer aspect than Buckman. It is heavier in character, more substantial in color scheme. It covers 90 acres and contains 1,386 houses, 56 apartments, stores and a recreation building. Yorkship Village offered an unusual opportunity to the town planner. The site is level, unobstructed, and of sufficient size to permit a comprehensive street system with regard to the most convenient travel routes and the best arrangement of lot areas. To what extent the architect has realized these

opportunities may still be argued by those who are eager to criticize, but to the observer, intolerant of technical trivialities and interested in "how it works," the plan of Yorkship Village is so much better than that of the city or town or village from which he comes, wherever it may be, that there is nothing to do but admire.

First of all, the village is laid out in a definite relation to its surroundings: Camden on the north, with which it is connected by two main thoroughfares, the New York Shipbuilding Corporation on the west, which it was designed to serve, and Gloucester on the south, to which it is joined by a main highway. The interior arrangement ties the village together, utilizes the curved line sufficiently to gain short closed vistas, and subdivides the site into well-dimensioned but irregular blocks.

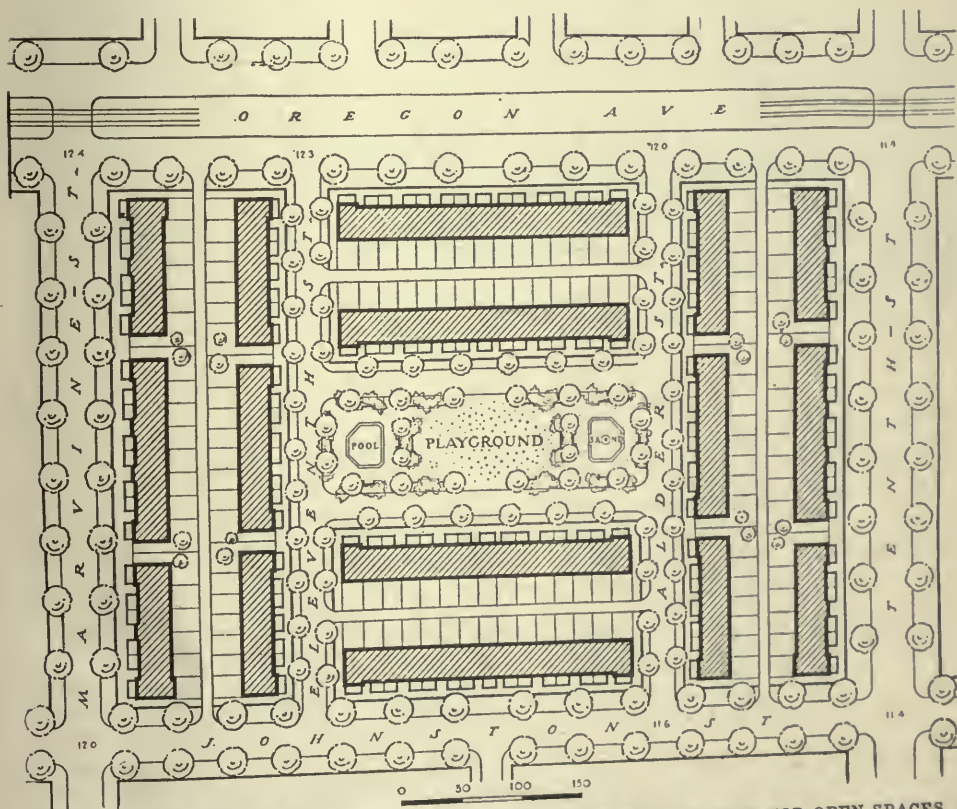
The houses are uniformly of Colonial design. This type of architecture for more than one hundred years has been predominant in New England mill towns where semi-detached houses of brick are clustered about the larger industries. These houses, substantially built of permanent materials, have withstood the wear and tear of the years, and, blending harmoniously with the surroundings, have given to these communities an atmosphere of dignity and permanence quite lacking in the clapboard towns and cities farther southward. The use of brick and the slate roof has justified

itself in New England, where depreciation has been reduced to a minimum. And while styles in architecture, like styles in hats, have had their transient vogues, the simple lines of the colonial house have never been abandoned. This is the type of house to be found in Bridgeport and in Bath, both war-time developments which are also worthy of peace-time consideration.

At Yorkship may be seen, as the result of careful planning, the inherent advantages of a large-scale operation. By the reservation of areas for public use, for playgrounds, parks, open spaces and public buildings and the detailed arrangement of ground areas, all the land has been utilized to highest advantage. In providing for a complete local community it has been possible to determine in advance what may be the best use of the land, avoiding the errors of chance growth and the depreciation of land values by encroachment of the undesirable. Advantageous as this is to the community as a whole and to every member of it, be he tenant or owner, it is of the

highest importance to the original investor. The Government has at Yorkship an investment which is properly safeguarded and properly controlled. Whether this development remains in government ownership or is ultimately acquired by the New York Shipbuilding Corporation as planned, it cannot fail to realize a tremendous increment in value as the surrounding area develops. And so long as this increment is conserved, there need be little concern over the war cost of the development. In short, wise maintenance may eliminate all possibility of loss.

To those cities now at work on a housing program, faced with high building costs and many variable factors which increase the element of risk, Yorkship shows that one factor alone may give security to an otherwise doubtful investment. By intelligent planning and by permanent control it is possible to undertake such an operation with confidence that first cost need not be a controlling element. Government housing offers no balance sheet proof of this. The



BLOCK PLAN OF OREGON AVENUE, PHILADELPHIA, SHOWING PROVISION FOR OPEN SPACES

cost of Yorkship under war construction may be far greater than the appraised valuation of the property to-day. But this cannot be determined until an appraisal, but lately begun, is completed. However, the business man may see the cost margin covered by the prospective movement in land value, which in the case of Yorkship has been foreshadowed in a recent publication of the Committee on New Industrial Towns. In this publication R. S. Childs offers a few comparative figures which tell much. He estimates the land cost at Yorkship at about \$90 per capita. At Gary the present value is \$743; at Lackawanna, built by the Lackawanna Steel Company, it is \$644; in New York, over \$1,000; in many towns the size of Yorkship, from \$150 to \$450. At a valuation of \$200 per capita for Yorkship the increment would exceed half a million dollars.

Communities which are to-day suffering with a housing shortage are not looking for speculative profits in housing. They want houses, but they want some safeguard against loss on their investment. All the safeguards now rest in their hands; the community itself will create all its future values. If it conserves those values it will eliminate all present risk in a housing development; if it fails to conserve those values there can be no adequate safeguard.

Noreg

The possibility of planning intelligently a self-contained community, of creating and conserving values, is not confined to large developments like Yorkship. Four miles to the southward near the Pusey and Jones shipyard is Noreg, a village of less than 400 houses. Here is an isolated and self-contained community that appropriates no values from the surrounding farm land. It is quite different from Yorkship, yet it is quite as attractive. From the bare land to the completed village every step was planned for a definite end, and the final result justifies the expectation that Noreg will survive on its own merits as a local community until it is finally absorbed into the rapidly growing district which surrounds it. In Noreg one may live content and be independent of the big town to the north.

Workers who have lived elsewhere are not slow to recognize the advantages which are offered by such towns as Buckman,

Yorkship and Noreg. With them it is not a question of absolute values. They are content that these houses are better than any available to them in the town from which they came—and the village itself is a better place to live in. This is what they will tell you. Of course there is always one who doesn't fit. He tells a different story. But of those who leave, it has been ascertained, at least in the case of Buckman, half break up housekeeping because of family difficulties, or lose their jobs, or fall back on rent payments; and half succumb to the lure of the big city. These are invariable factors which no housing plan can control.

In the end these government towns will be judged not by any details of construction or originality of architectural design, or by any ingenious town planning feature, but they will be judged on a comparative basis, as self-contained units, by the workers who live in them and by their neighbors who are most directly influenced by them. Already the reaction is too favorable to permit much consideration of easy criticism. How these developments impress Philadelphia may be learned from a brief reference to them in the latest report of the Philadelphia City Parks Association, in which appears the following paragraph:

"But the United States Government, by its example, has made up, and more than made up, for what the City Government has failed to do. The physical demonstration of town planning on a large scale, carried into execution in several localities in Metropolitan Philadelphia, has established a standard for city planning that it would have taken years to attain without war. The sort of street system—if lines at right angles to each other, such as any grammar grade school boy could plot, can be called a 'street system'—by which Philadelphia and Camden have been straight-jacketed, cannot stand the competition of such towns as Yorkship Village, fifteen minutes from the Pennsylvania ferry house and Camden, or the new suburb of Wilmington, called Union Park Gardens, or Buckman. . . . These war towns and war suburbs are bound to have a profound effect for good thruout the nation. The force of physical results is too potent to deny its potency. Workmen who have lived in such towns will not be content with less advantageous surroundings. Building operators must equal these developments or go out of business sooner or later."

While considering the values to the community which have been created by the Government, it is interesting to observe how useful was the same method of careful planning when applied to the development of a

small group of houses on Oregon Avenue, in South Philadelphia. Here, on filled-in land, the familiar type of Philadelphia house, two rooms deep, was grouped in double rows around a central open space or playground, minor streets and alleys providing local communication. By such simple departure from the unimaginative and depressing monotony of unbroken vistas of row houses may standards be raised, and by

the thing done, a higher standard in housing than has heretofore prevailed, an operation extensive enough to be controlled as a unit and protected from encroachment of any kind that will depreciate values. It means continued control of the property until final liquidation and the conservation of all the values created, for the satisfaction of the investment, and, barring profit, for the benefit of the town.



SETBACK OF ALTERNATE GROUPS IN A SOUTH PHILADELPHIA HOUSING PROJECT

comparison with surrounding conditions new values be created for the permanent benefit of the community.

The community about to launch a housing plan, whether thru its chamber of commerce or any other agency, is faced not only with a minimum requirement in housing to be satisfied; it is faced with an obligation of performance which will benefit the entire community. In a housing enterprise it must give to investors every guarantee and every safeguard that can be provided in advance of the operation. It must seek security and permanence in the investment. This means a better quality in

This much is shown by a superficial walk thru the new federal towns. In time it will be possible to analyze costs and find the economies in large-scale operations; it will be possible to measure accurately the value of many devices first employed which cannot now be estimated. To-day these government towns suggest great possibilities, and these possibilities exist only for those communities that will see them.

EDITORIAL NOTE.—The architects of the housing undertakings illustrated in this article are as follows: Buckman, G. Edwin Brumbaugh, of Simon & Basset; Noreg, Bissell & Sinkler; Oregon Avenue, Rankin, Kellogg & Crane; the South Philadelphia project illustrated on this page, Clarence Wilson Brazer, New York.

What It Costs to Flush the Streets of Boston

By Guy C. Emerson

Consulting Engineer, Boston Finance Commission

AT the present time there are three forms of flushing machines in use in Boston, in distinction from street sprinkling machines. The city owns a number of flushing machines with rubber squeegee rollers; these are operated by city labor entirely. There is also a contract with a company to operate its electric trolley cars with flushers over certain paved streets containing car tracks. The remainder of the work is done by contract.

Contract Cost of Motor Flushing

The motor flushing is contracted for at a per diem rate for each truck, on the basis of an 8-hour day, and this cost the

Operation of Flushers

The trucks are equipped with tanks and pressure equipment. The tanks are cylindrical, of 800, 1,000, 1,800 gallons respectively. Each is equipped with a centrifugal pump, which furnishes water directly to the spray nozzles, the pump being geared to the transmission shaft. At a fair rate of speed a sufficient pressure is developed to cover a 70-foot street, that is, 35 feet on each side of the truck. Because of the rather narrow and winding streets in Boston, these trucks are not used to their full capacity. This fact accounts in some measure for the discrepancy between the actual capacity of the truck, which is indicated by



ONE OF THE BOSTON FLUSHERS CLEANING A COBBLESTONE PAVEMENT

city \$26 a day for 1918, and \$24.75 for 1919. Under this contract eight trucks were furnished, six being electrically driven, one a Pierce-Arrow and the other a Mack. The contractors state that the cost of operation of these trucks, including chauffeurs, gasoline, oil, tire expense, and small repairs, but not including winter overhauling, interest on investment, or depreciation, is from \$11 to \$13 per day for the electric trucks, and \$22 to \$24 a day for the gasoline trucks, an average of approximately \$17 per day. The contractor states that because of the comparatively low operating cost of the electric trucks he makes a lower price than if all the trucks were driven by gasoline motors.

the figures below, and the actual amount of work done by them.

Ordinarily a gasoline-driven truck can be depended on to deliver at least 50 per cent more work than an electrically driven truck, according to results obtained in Boston. The gasoline truck may be depended upon to operate at an average of 5 miles per hour, or 40 miles per 8-hour shift, including the time actually spent in going from one street to another. From 18 to 25 gallons of gasoline per 8-hour shift is consumed, depending upon the surface, weather and other conditions.

The contractors give the following results for tests conducted with the Mack truck, showing the actual capacity of this

machine. This test shows that, not including the time going to and returning from the job, 24,000 square yards of pavement per hour would be a good average for flushing, including time for loading the truck, approximately five minutes for each load. Thirty-two loads can be delivered under such conditions during each shift, making a possible 192,000 square yards of street flushed each day, approximately 60,000 gallons of water being used in the operation.

The following is a tabulation showing the cost of flushing Boston streets with auto trucks for the fiscal year 1918:

Cost of flushing by auto trucks.....	\$5,720.00
Cost of inspector	400.00
Total	\$6,120.00

Area flushed, square yards.....	7,309,826
Cost per 1,000 square yards flushed once....	.83
Number days' work, total (8-hour periods).....	220.00
Average square yards per 8-hour day.....	33,226

The discrepancies between the work actually performed and the truck capacity, as shown by the contractors' tests, are accounted for by the narrow and winding streets, some of which are very short, with frequent corners and steep grades. These do not allow the trucks to operate at economical speed or to use the width of work

possible. Streets that are flushed are not necessarily connecting streets, and much time is wasted in going from one street to another. In practice, on account of conditions already quoted, or because of lack of skill by the chauffeurs, from 30 to 40 per cent of the work is duplicated.

During the winter the trucks are dismantled and the chassis equipped with a body for commercial service. This expedient is of doubtful economy. Certain changes have to be made in the structure of the chassis, with the result that in practice the expenditure of approximately \$1,200 is involved in dismantling the trucks, equipping them with commercial bodies and again restoring the flushing bodies. The two operations ordinarily consume a month's time and much material and equipment is invariably lost, the replacing of which contributes to the expense. Under Boston's winter conditions, with large amounts of snow, it is doubtful if this use of auto trucks is economical during the three winter months December, January and February, because the depreciation and the wear on tires and other operating expenses are so excessive compared with those of the remaining months of the year.

Millions for Street Lighting

American Cities Rapidly Increasing the Effective Illumination of Their Business and Residence Districts

By Dudley M. Diggs

NOW that restrictions on progressive city improvements are lifted, one of the utilitarian requisites of cities is *light*. That our cities must be lighted at night is self-evident, and it is only a question, first, of the amount of money that can be obtained for this purpose; and, second, the best utilization of this money.

The procuring of the money for lighting is too often given very scant consideration in proportion to its importance, and the amount available is so small that the city has to suffer in quality or quantity of lighting service, or perhaps both. So apparent is this fact becoming that more and more citizens are realizing the importance of having their cities well lighted, and in down-town districts, where the largest

amount of light is needed both for utilitarian purposes and also for night attractiveness, the merchants are coming together and adding voluntarily to the amount required to bring this up to a high standard.

The magnetite arc lamp is playing an important role in this drama of progress, and for this reason it should be of interest to know how and where it is being used. There are nearly one-half million of them in use to-day.

After the wonderful attraction of the Panama-Pacific Exposition, the San Franciscans decided that something must be done to remedy the usual after-exposition reaction. That this must be something unusually attractive to both natives and transients was self-evident and, moreover, the

improvement should be a permanent one. As the lighting of the exposition was one of its greatest achievements, the lighting of the city was naturally considered, and it became evident that this improvement was something of real merit that would be attractive, useful and permanent. Every illuminant was considered, and after exhaustive study it was found that nothing could so well meet the desire to be "The Best Lighted City in the World" as the light that had accomplished so much at the exposition—the magnetite arc lamp.

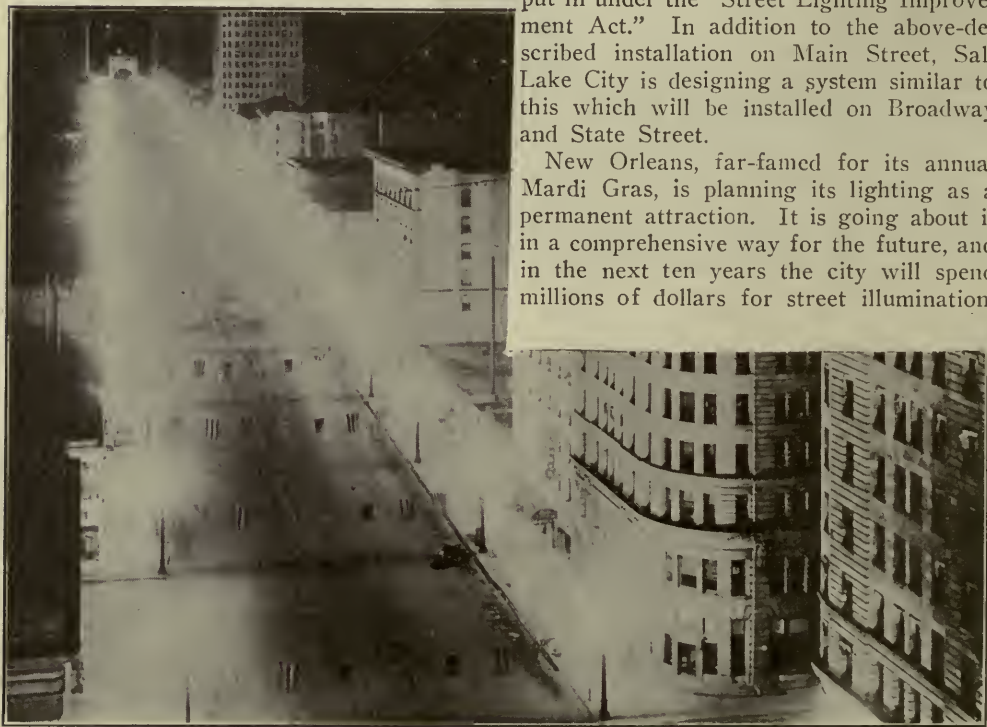
The business men of Market Street started the ball rolling; they agreed to stand a part of the expense, and raised over three-quarters of a million dollars to do this. The total installation of 137 standards cost approximately \$100,000, and the operating cost is \$34,753.48 per year. Of this amount the city pays \$13,251.33, the Downtown Association \$14,926.15, and the united railroads, in accordance with an agreement of their franchise, pay \$6,576. The installation was received with so much enthusiasm that the rest of what is known as the Triangle District (Market, Powell,

Sutter and Kearny Streets), the retail business section, has adopted the same system. This latter installation was described in detail in the December, 1919, City Edition of *THE AMERICAN CITY*.

Los Angeles, not to be outdone by San Francisco's "Path of Gold," decided to have a "Path of Roses," with a standard and a colored light, in keeping with the name and the tradition of the City of Roses. The city is installing 134 beautiful two-light ornamental luminous standards, 27 feet high and spaced approximately 106 feet apart. This was accomplished under the "Street Lighting Improvement Act," whereby property owners are assessed on a front-foot basis. The total installation cost was approximately \$85,000, or about \$6.50 per front foot. The annual operating cost will be \$14,000, or about \$1 per front foot.

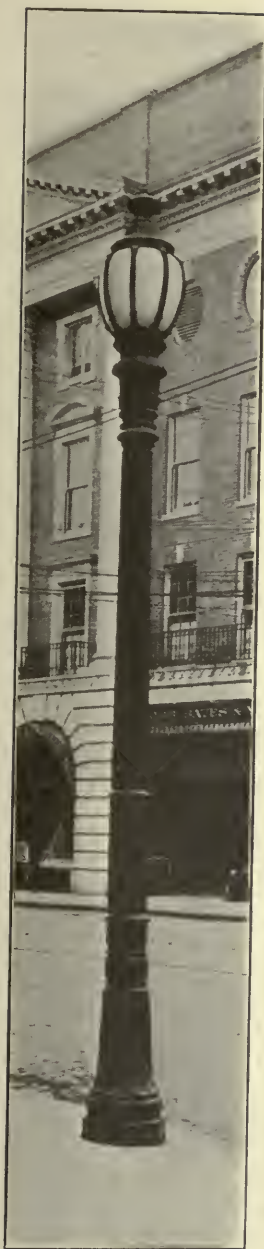
Salt Lake City has also come to the front in the last few years, having seventy standards comprising a white way district, each carrying three ornamental luminous arc lamps. The total cost of the installation was \$28,220.40, and the cost to operate per year approximately \$9,700. This was also put in under the "Street Lighting Improvement Act." In addition to the above-described installation on Main Street, Salt Lake City is designing a system similar to this which will be installed on Broadway and State Street.

New Orleans, far-famed for its annual Mardi Gras, is planning its lighting as a permanent attraction. It is going about it in a comprehensive way for the future, and in the next ten years the city will spend millions of dollars for street illumination.



A WELL-LIGHTED THOROPFARE IN SALT LAKE CITY, UTAH

Note the Uniform Distribution of Light on the Street and Building Facades



ORNAMENTAL LUMINOUS ARC LAMP,
SALEM, MASS.

Plans are being drawn up for an elaborate installation on Canal Street, for white way installations on other downtown streets, and for a scientifically planned layout for the city's boulevards and residential streets.

Detroit, Mich., the ever-growing automobile center, is spending money on a large scale for better lighted streets and will add 1,500 luminous lamps as soon as they can be delivered and installed.

Philadelphia is going to do things on a comprehensive scale. For the past several years the authorities have studied, investigated and experimented and they have now decided to work towards the replacement of the old open arc carbon lamps with the luminous arc lamps, to be accomplished by providing a budget to take care of the change of a definite number each year. This year they will in-

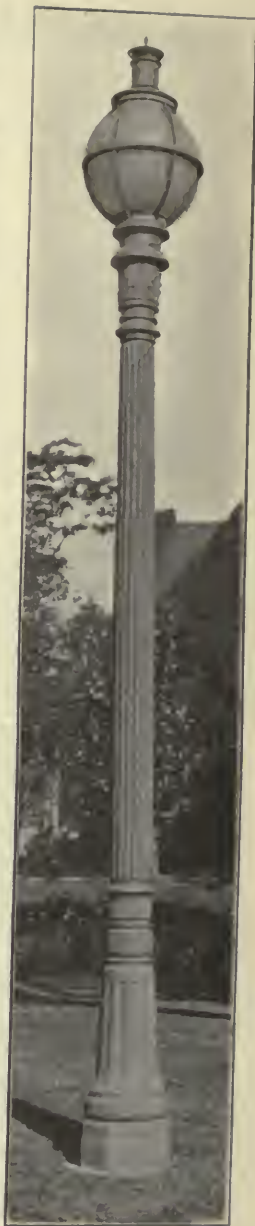
stall 1,000 of the luminous lamps, next year a larger number, and so on until the change is accomplished.

Erie, Pa., a city of manufacturers, with a population of 90,000, is also working toward a definite and well-laid-out plan. The opening of the ornamental luminous

white way in the down-town section has recently been celebrated, and the city is contemplating a number of street lighting improvements in other sections which will be taken up and installed as rapidly as conditions will permit.

Bridgeport, Conn., a thriving and fast-growing New England town which jumped from a population of 100,000 in 1910 to a population of approximately 200,000 in 1919, realized the advantages of an ornamental system in holding and attracting businesses and residents, and therefore determined to put in one of the best at the beginning of the campaign to double the population. A white way was installed of approximately 150 ornamental luminous lamps. These big-ribbed balls of sparkling white light add greatly to the city's attractiveness, and their installation has kept pace with its growth. The major portion of the down-town section is covered with 500 of these lamps.

Danbury, Conn., altho not such a large town as the others described, is ambitiously going ahead. The city is expending \$25,000 on a street lighting system.



LIGHTING STANDARD,
USED IN LYNN, MASS.

Rock Asphalt for City Pavements

Construction Methods Used at Hopkinsville, Ky.

By Charles Vaughan

Superintendent of Streets

KENTUCKY rock asphalt consists of sandstone impregnated with asphalt. Its formation is similar to that of asphalt, except that, as mined, the bitumen constitutes only a relatively small percentage of the product obtained. It contains from 7 to 9 per cent bitumen, and deposits are found in Edmonson and several adjoining counties. Other important deposits of rock asphalt are found in Texas and Oklahoma.

Mining and Preparing

The general methods of mining or quarrying rock asphalt are not unlike those of ordinary rock quarrying. After being taken from the quarry, the rock asphalt is crushed or broken up so that it may be readily shipped. It is usually crushed between toothed or grooved steel cylinders or by centrifugally operated flail or hammer crushers. In preparing the product to make it suitable for use on highways, it is often necessary to mix two or more grades of rock asphalt containing different percentages of bitumen. However, this is done at the quarry before the material is pulverized, and obtains a uniform product. The material is shipped in open gondola cars in the pulverized state, ready to lay.

Characteristics

Kentucky bituminous sandstone consists of graded silica sand, not only coated but impregnated with bitumen. A prepared bituminous sandstone may therefore have the general appearance of a sheet asphalt paving mixture.

The analysis of a typical American bituminous sandstone prepared from material obtained from an extensive deposit in Kentucky is given below:

	Per Cent
Bitumen	7.5
Passing 200-mesh	11.5
Passing 100-mesh	22.0
Passing 80-mesh	24.0
Passing 50-mesh	30.0
Passing 40-mesh	4.0
Passing 30-mesh	1.0
	100.0

From Blanchard's American Highway Engineers' Handbook, page 1015.

Paving in Hopkinsville

In 1917, South Virginia Street, Hopkinsville, Ky., was resurfaced with rock asphalt for a distance of 5,380 feet. In addition to this, 9,711 square yards of the same material were laid in the city at a cost of 87 cents per square yard in 1918. South Virginia Street has an average roadway width of 27 feet, and before resurfacing it was paved with waterbound macadam. Before applying the new surface, the stone gutters were removed, the pavement was scarified, and two inches of the old macadam material was removed. The roadway was then regraded and rolled. Following this, 3 inches of new stone, ranging in size between 3 and 3½ inches, was laid and rolled solidly with a 10-ton roller. This material was well sprinkled prior to each rolling.

After the rolling, asphalt was applied to a thickness of about 2 inches, and was rolled once a day for three successive days with a 10-ton standard roller. The asphalt was carried from curb to curb, being used for gutter as well as road surfacing.

In this work an average of 1 ton of rock asphalt was used for 13 square yards of street surface. At that time rock asphalt cost the city of Hopkinsville \$5.90 per ton delivered in Hopkinsville, or 57½ cents a square yard as laid. It was shipped in open gondola coal cars and loaded into dump-wagons at the siding with prong forks. Six men loaded from the car into two dumping wagons, which hauled the material to the street and deposited it on a dumping-board. These men could unload 80 tons of asphalt per day, keeping two teams busy hauling the material one mile. Eight men spread the asphalt with shovels, and two men raked it to the desired 2-inch thickness. This gang, totaling sixteen men and two teams, laid an average of 1,050 square yards per day.

The upkeep for this pavement for 1918 has not exceeded \$100, and it carries the heaviest trucks in the city, amounting to about 2,500 vehicles every twelve hours.

Reclaiming a Polluted River

How New York and the Adjacent Towns and Cities in Westchester County
Are Developing the Bronx River Parkway Reservation

By Jay Downer

Engineer and Secretary, Bronx Parkway Commission, New York City

THE extension of New York's city plan to include a 15-mile parkway along the Bronx River from Bronx Park to Kensico Dam; the construction within the Parkway of a 40-foot motor drive, an arterial highway extending northward and forming a traffic feeder from the city to the state highway system radiating from Kensico Dam; the development of the Parkway Reservation into playgrounds, athletic fields and recreational areas—these are the outstanding features of the Bronx River Parkway Reservation project now being carried out jointly by New York City and Westchester County.

Reclaiming the Bronx River

The raw material, so to speak, out of which the parkway has been created might have been inventoried as one sewage-polluted little river, to wit, the Bronx, with its despoiled and disfigured valley lands. At all of the cities and villages along the river there were refuse and garbage dumps, stables, shanties, closets, billboards and other thorns that nettle civic pride. Out of such conditions a great parkway has been materialized and is well on the way toward final development.

The primary purpose of the project was to reclaim the Bronx River from its badly polluted unsanitary condition. This has already been achieved, and the Parkway Reservation has been fully established by the acquisition of practically all necessary lands. In some portions landscape and other development work has been completed, and in nearly all sections the river and lands are now being used for recreational purposes by the public.

From its source in the Westchester hills at Mt. Pleasant and North Castle, the Bronx River winds a course of about twenty miles thru an attractive valley to Long Island Sound. The city of White Plains, Scarsdale and several other villages, and the city of Mount Vernon, are among its

valley towns and constitute a part of what is now the metropolitan district of New York City. South of Mount Vernon the river flows thru the boro of the Bronx, within the limits of the city.

Thousands of visitors to Bronx Park know the Bronx River as the picturesque little stream that enlarges into a small lake in the Zoological Park and later rushes thru a hemlock-wooded, rocky gorge and



A SEWER OUTLET INTO THE BRONX RIVER;
THIS SOURCE OF POLLUTION WAS ELIM-
INATED IN 1918

tumbles over the falls just above the old Lorillard snuff mill, now a park workshop. The river and its small lakes are important features of Bronx Park, but a few years ago the lakes had become receiving basins for sewage and filth carried down by the river. The upper part of Bronx Boro and Westchester towns used the river as a drainage outlet for sewage and factory wastes; the park lakes received this flow, and with



LOWLANDS ALONG THE BRONX RIVER, FORMERLY INUNDATED AT HIGH WATER

the rapid growth of population the situation became intolerable. Investigation developed the fact that the best solution of the problem would be the creation of a parkway along the Bronx River from Bronx Park to Kensico Dam, a distance of fifteen miles. The necessary legislation was secured in 1907, and three commissioners were appointed. The law provides for a reservation embracing narrow, controlling strips of land on both sides of the river, with authority to abolish and prohibit pollution of its waters. This reservation is now fully established, and practically all pollution of the Bronx River has been eliminated.

The New 15-Mile Motor Driveway

With the sanitary improvement of the river and its valley accomplished, the project is taking shape not only as a large-scale park development but as a most important extension of the city plan of New York. The whole Bronx River valley is being developed as a recreation ground, and an important feature of the development is

a motor driveway having an average width of 40 feet, and extending from Bronx Park in the city to Kensico Dam at Valhalla, a distance of 15 miles. In a recent report by the Chief Engineer of the New York City Board of Estimate and Apportionment, attention was directed to the fact that it is useless to build boulevards or other arterial traffic lines which stop at the city limits, or are continued as narrow, inadequate country roads. The projected Bronx River Parkway drive will be a splendid motor traffic outlet northward from the city, and will provide a connection with the fine system of state highways radiating from Kensico Dam.

Kensico Dam, the northern terminus of the Parkway, is a monumental structure and has received most careful architectural study and treatment. It is one of the largest dams in the world and impounds a vast supply of water brought down thru the new aqueduct from the Catskills. The designers believed that this impressive structure would inspire civic pride in the citizens of New York, and its architectural treatment



THE SAME LANDS SHOWN ABOVE AFTER BEING RECLAIMED AND GRADED BY THE BRONX PARKWAY COMMISSION



SWAMP LANDS BORDERING THE BRONX, BEFORE THEIR RECLAMATION

has been in keeping with this high ideal. The Bronx River Parkway provides a magnificent approach to Kensico Dam, and is a connecting link between the park system of New York City and the Croton watershed lands beyond the dam. These lands, nearly 30,000 acres in extent and owned by New York City, form the margins and wooded drainage slopes of the Croton system reservoirs. The reservoirs are, in effect, lakes formed in natural basins among the hills of scenically beautiful sections of Westchester and Putnam Counties. Traversed by a system of state highways, the watershed lands form for New York City an outer park system probably unequalled in the world.

Acquiring the Lands

New York City and Westchester County jointly participate in the Parkway undertaking, and final authorization to commence work was received from the New York City Board of Estimate and Apportionment and the State Legislature of 1913. The Parkway Commission is composed of Madi-

son Grant, representing the boro of Manhattan; William W. Niles, representing the boro of the Bronx, and Frank H. Bethell, representing the county of Westchester, and successor to the late James G. Cannon. From the beginning these gentlemen believed that business principles could be applied to civic administration.

They applied this policy to the acquisition of the necessary lands, of which there were about 1,300 parcels within the Reservation limits. Condemnation proceedings to acquire lands invariably result in fat awards and fees paid out of public funds. This Commission determined to buy lands direct from owners in all cases where reasonable values could be agreed upon, and to pay cash. Standard land values based on expert appraisals and on the best obtainable information were adopted in various localities. There were no secret deals. Proposed purchases were published in advance in the local press; all records and transactions were thrown open to the public.

Two-thirds of the necessary lands were



THE FORMER SWAMP LANDS AS THEY NOW APPEAR SINCE BEING MADE A PART OF THE BRONX PARKWAY

acquired in this way, and the entire cost of administration, including all expenses incidental to the acquisition of these lands, appraisals, title insurance, legal expenses and conveyance, was less than $3\frac{1}{2}$ per cent of the value of the land acquired. Similar proceedings in which these expenses have run up to 40 or 50 per cent of the land values are not uncommon. As a final resort, condemnation proceedings were started on January 1, 1916, and title was taken to the remaining lands.

In Westchester County most commendable public spirit was shown by a number of people who either gave lands to the Parkway Commission or sold at nominal prices.

Improvements Along the Parkway

The photographic record kept by the Commission strikingly shows the transformations that have been made by reclamation and development work. Refuse dumps and swampy river margin lands, encumbered with stables and billboards, have been replaced by wholesome play fields and recreation grounds.

Between Bronx Park and Williamsbridge, a section of the Parkway drive has been paved and stone paths have been built along the river; this area has been graded and planted with trees and shrubs, so that in effect it is an extension of Bronx Park. Between Woodlawn and Mount Vernon a new river channel has been dredged and a swampy area is being converted into small lakes for canoeing and water sports. At Bronxville and at White Plains a large amount of grading, planting and landscape development has been completed. A small lake, created by building a dam at Bronxville, has provided swimming and skating for many thousands of people.

A Great Public Benefit

Restored to its natural condition of purity everywhere north of the New York City line, the Bronx River and its valley have become a valuable asset to New York City. For recreational purposes their value to the city and metropolitan district is inestimable. Over 70,000 people bathed in the river in 1918, and ball grounds, tennis courts, athletic fields and playgrounds were in use throughout the reservation.

The Bronx River furnished a typical example of the problem usually presented by small streams flowing thru cities and densely

populated districts. The general introduction of sewerage systems in the nineteenth century, altho a great advance in the art of sanitation, simply transferred filth from houses to watercourses, and in recent years the problem in many cities has been to clean up the streams.

It has come to be recognized that even the small streams are among our valuable natural resources, even tho they do not generate power, furnish drinking water for cities, or carry commerce. In recent years the increased popularity of out-of-door life and the movements for protection of native birds and animals have brought recognition of the value of the streams and their wooded margins.

By the application of enlightened measures of conservation, New York has preserved the Bronx River for all time, and converted it from an unsanitary nuisance into a great public benefit. Polluted and neglected streams usually create a zone of depreciated real estate values and a lowering of civic standards and pride. Out of such a zone the Bronx River Parkway Reservation has been created, and the Parkway Commission has made continuous efforts and progress toward the betterment of civic ideals.

One tenacious nuisance encountered at the beginning of the work was the advertising billboards, which extended along the Parkway lands for several miles. After an extended campaign the billboards have been entirely eliminated within the Reservation limits. The Bronx River Parkway now forms an important line of approach to New York City, along which shrubbery, trees and open spaces are not blotted out by hideous signboards.

The influence of the Parkway Reservation is strikingly shown in the improved standards of design for viaducts and bridges either under construction across the Reservation or projected for the near future. The Bronx River valley passes between long north and south ridges on which are located rapidly growing sections of Bronx Boro and the cities of Mount Vernon and Yonkers. Modern traffic conditions require high level connections across the river valley and connecting these communities. Farther north in the city of White Plains a bridge across the valley and Parkway Reservation is projected.

These bridges abolish grade crossings of

the Harlem Division of the New York Central Railroad, which shares the cost with the state and the municipalities benefited. The contrast between the straight-line, steel-column and girder type of construction proposed by the railroad company, and the graceful, arched bridge design which was adopted on the Parkway Commission's recommendation, is striking.

In recapitulation it may be said that the Bronx River Parkway project takes rank as a very notable development, even in comparison with the park systems of the world's largest cities. It has effected an important sanitary improvement, and has conserved and restored to naturalistic conditions a stream that is of inestimable value; it will provide New York City with a valuable motor traffic outlet, and make available

about 1,200 acres of wooded recreation lands for New York City and its metropolitan district; finally, it has exerted potent influence in raising civic standards, not only in landscape work, roads and bridges, but in economical administration.

In this great parkway New York City is planning wisely for future as well as present needs. Its development was naturally retarded by war conditions, but during the latter part of the 1919 working season river dredging, grading and other construction work has been actively prosecuted. Comprehensive plans have been prepared for the complete final improvement of the Parkway, and its orderly development seems assured, but will be extended over several years so that the financial burden in any one year will not be too heavy.

Investigation of Salaries of State, County and Municipal Engineers

THE country is facing the responsibility of an enormous undertaking—that of wisely planning the extensive increase and improvement of its highway system. This responsibility rests mainly upon the highway engineers and officials. These men must be experienced and able in order that this great opportunity may be fully realized. They must, then, be adequately compensated for their services. Public opinion must be aroused on the subject.

A committee of the Engineering Council is conducting an investigation of the salaries of state, county and municipal engineering services by means of a circular letter. The responses which have been received show that there is considerable unrest among the municipal engineers throughout the country because of inadequate compensation.

The American Association of Engineers' committee on salaries of engineers in public service has published a proposed recommendation for salaries of engineers in the state highway services, and the figures of this report were approved at the recent annual meeting of the American Association of State Highway Officials. They are as follows:

Administrative and Executive Positions

Chief engineer	\$8,000 to \$15,000
Engineer of construction	6,000 " 10,000
Engineer of maintenance	6,000 " 10,000
Engineer of bridges	5,000 " 8,000
Office engineer	5,000 " 8,000

Engineer of tests	4,000 to 7,000
District engineer	5,000 " 8,000

Senior Engineering Positions Involving Some Administrative Duties in the Higher Grades

Advisory and consulting engineer to the chief engineer	\$5,000 to \$10,000
First assistant engineers (construction, maintenance, bridge, and office)	3,600 " 5,000
Assistant engineers	2,400 " 4,000
Chief chemist	3,500 " 5,000
Assistant chemists	2,000 " 4,000
Chief draftsmen	2,400 " 4,000
Chiefs of survey parties	2,400 " 4,000

Inspection Service

Confidential inspectors	\$4,000 to \$5,000
General inspectors of maintenance	2,400 " 4,000
Inspectors of bridge construction	2,400 " 4,000
Field inspector of materials	2,400 " 4,000
Inspectors of construction	2,400 " 3,000
Inspectors of construction employed during working season only, to receive monthly	250 " 300

Junior Engineering Positions Concerned with Routine Work Only

Engineers, draftsmen, computers, checkers, assigned to state headquarters	\$1,800 to \$2,400
Computers and checkers assigned to bridge engineer	1,800 " 2,400
Engineer draftsmen assigned to division headquarters	1,800 " 2,400
Instrument men	1,800 " 2,400
Instrument men employed during construction season only, to receive monthly	200 " 250
Laboratory assistants	1,800 " 2,400
Podmen, chairmen and tracers	1,200 " 1,500

All engineers working away from state or division headquarters to which they may be assigned are to receive traveling and subsistence expenses.

This schedule not to operate to reduce any salaries now existing.



PART OF THE FLEET OF TRUCKS WHICH MADE THE DIRT FLY WHEN ANDOVER, MASS., ACQUIRED A NEW STREET

Motor Trucks Expedite Street Work

Andover, Mass., Exchanged Streets With One of Its Citizens to Their Mutual Benefit

AN interesting piece of street construction was carried on in Andover, Mass., when, thru the coöperation of William Woods, President of the American Woolen Company, an exchange of streets was made between the city and Mr. Wood. Poor Street, an existing highway, was not one of the essential thoroughfares of Andover, and a street that might be located near-by and which would prove more beneficial would either have to go over a steep hill or necessitate heavy cutting to reduce the

grade. Mr. Woods wished to make certain improvements on his large estate in Andover and offered to build a new street for the city providing it would deed Poor Street to him. The offer was accepted, and eleven Federal trucks—nine dump trucks and two flat—were put to work on the hauling proposition, so that within a very short time the new street became a reality. The accompanying illustration shows some of the work under way, and some of the equipment that accomplished the task.

Motor Transport Caravan Campaigns for Good Roads

Tremendous impetus to the good roads movement thruout the West was given by the motor transport caravan sent out by the War Department from Washington, D. C., to the coast over the Lincoln Highway. As a direct result of the educational work done in hundreds of towns and cities in the agricultural districts by the speakers who accompanied the caravan, numerous bond issues for good roads were approved. In many places the issue of good roads hung in the balance, but the passage of the truck train put the proposition over. Farmers came from miles around to see the trucks. Many of them had never before seen a 44 x 10 pneumatic tire. Talks given by army men won hundreds of people over to the idea of improving transportation facilities. Many communities were about to vote on bond issues for better roads when the caravan came along and helped them to decide in favor of the question.

Drainage Project in Erie, Pa., Nears Completion

By William D. Kinney
Director of Public Property, Erie, Pa.

ONE of the many great municipal projects now under way in the United States is the construction of a tube 18 by 22 feet in the city of Erie, Pa., to take care of Mill Creek, a stream which winds its way the full length of the city, and which caused the disastrous flood of 1915, resulting in the loss of 22 lives and the destruction of property valued at \$2,500,000. The flood followed a cloudburst and the blockading of a culvert at a high elevation. When the culvert gave way, the water rushed down Erie's main thoroughfare and side streets, causing death and devastation.

The Council of the city of Erie took steps to prevent a repetition of the calamity, and after much engineering advice decided upon the building of the great reinforced concrete tube. The engineers are Gannett, Seelye & Fleming, of Harrisburg, Pa., and the contractors are the Folwell-Alskog Co., of Chicago, Ill. The cost of the great culvert or tube will be in the neighborhood of \$2,000,000. One section has already been completed and accepted. An idea of the magnitude of the work is given in the accompanying illustration.

The land to be reclaimed and improved lies within two squares of what was for years an unsightly and foul-

smelling stream, and will produce in taxation on improved property within the next ten years sufficient revenue to meet the cost of the big undertaking. The tube will be completed during the year 1920.

The city of Erie is expending this year about \$4,000,000 for the elimination of railroad grade crossings and other engineering work. The water department is about to build another large reservoir, and the city has retained the engineering firm of Chester & Fleming, of Pittsburgh, to prepare plans for an intercepting sewer. All the sewage of the city now flows into Lake Erie. The sewer will be about three miles long with a modern sewage treatment plant. A garbage reduction plant is planned to replace the present incinerator.



THE MILL CREEK CONCRETE TUBE NOW NEARING COMPLETION AT ERIE, PA.

Sewage disposal must be as perfect as it is possible to make it, remembering that all infectious disease comes from the excretions and secretions of human beings and that these wastes must be guarded in such a manner that they will not be a menace to others. The sanitary disposal of sewage is a public health necessity, and it is the health officer's particular business to see that it is properly installed and operated.

Improving the Subsoil of Deep-rooted Park Trees

By J. S. Kaplan

Forester, Department of Parks, Boros of Manhattan and Richmond, New York City

THE poor condition of the trees in Central Park, New York City, has attracted the attention of the general public for several years past, and the mortality in the spring of 1918 as a result of the protracted extremes of temperature during the previous winter was so great that it emphasized the general debility of the trees in the park and their inability to resist an unseasonal climatic change.

Over 4,000 trees were marked for removal, and, with a force of men already too small to handle the general maintenance work of the department, it became necessary to resort to mechanical aid to clean up the devastation. After several demonstrations, a hand-power stump-puller was purchased, and with its aid the park was eventually cleared of its dead trees. Thru the use of this machine a condition was disclosed which if improved will materially lengthen the life of the trees and increase their vitality to resist unusual insect attack, summer droughts, severe lengthy frosts

and generally adverse conditions of tree growth which obtain in the vicinity of New York City.

By the use of this machine, the trees are pulled over and the stumps torn free from the ground with a ball of earth adhering to each practically intact. This ball of earth for the most part was composed of a stiff impenetrable clay thru which the roots failed to pass. Subsequent investigation disclosed the fact that over the major portion of the park the native subsoil was made up of this impermeable clay. This condition was apparently known to the designers and builders of the park, as clay pipes about two inches in diameter were frequently found placed vertically and horizontally immediately under several of the trees that were removed. Again, large boulders seem to have been deposited in the tree hole, then covered with good top soil before the trees were finally planted. It is presumed that an attempt was made to improve the physical condition of the subsoil in the



A TYPICAL LARGE STUMP WITH IMPENETRABLE BALL OF CLAY, AS FOUND IN CENTRAL PARK, NEW YORK CITY

vicinity of the established trees to afford better drainage and to make accessible for the root system a greater depth of soil. These conditions prevail over what is generally known as the "made" portions of Central Park. Within this area, practically two-thirds of the park area, tons and tons of top soil were deposited and the smaller hills and valleys were made to provide definite vistas and to conceal as much as possible the paths, roads and bridle-paths.

The depth of the topsoil varies from one to four feet, and it maintained the trees originally planted as long as the root system did not penetrate it. Frequently the roots immediately adjacent to this clay were found to have rotted, indicating that the clay had established an artificial water level that had incapacitated a portion of the root system from functioning properly. It was evident that for the last few years the trees had been supported by a few superficial surface roots, which, lying near the surface of the ground, were subjected to the

abuse of unseasonal climatic conditions. The winter of 1917-1918 found them in this generally devitalized condition, and their inability to withstand the unusual cold was the cause of the death of so many during that season.

To improve the subsurface condition it is intended to dynamite the clay subsoil, and it is hoped that by establishing a sufficient number of fissures in the clay, the top soil will be properly drained and the roots of the deep-rooted species will penetrate the clay and find added nutriment to extend their far too short lives. It is intended to take a sample area and drill holes about 18 feet apart and fill them with a light charge of dynamite sufficient to shatter the clay, but not strong enough to destroy the sod or harm the trees and shrubs growing on the test area. This practice has been successfully employed among orchardists for breaking up a subsurface hardpan, and it is hoped that a similar success will result in Central Park.

An Imperative Need—Increased School Accommodations and More Money for Better Teachers

Recent figures compiled by the National Education Association indicate that "more than 100,000 teaching positions in the United States are either without teachers or else supplied with teachers who are admittedly unqualified to teach."

In New York City there are 232,347 children on part-time or double-shift in the elementary schools. Nearly a quarter of a million children, or about one-third of the school population, are compelled by law to go to school and yet are not given facilities for a real education. No new schools have been opened during the last year. The Gary plan, which in 33 schools was helping to solve the problem of overcrowding, has been eliminated from most of these, as a political move.

In Philadelphia 20,000 children are reported to be constantly on half-sessions, and a changing group averaging 5,000 were last year without teachers.

This unhappy state of affairs is not by any means limited to the larger cities. In Anniston, Ala., 3,137 were last winter denied admission to the schools for lack of buildings. In many of our small cities and towns similar conditions exist.

—(Figures reported by the National Child Labor Committee.)

Municipal Improvements in Guayaquil, Ecuador

By Leon F. Price*

Civil Engineer, Guayaquil, Ecuador

THE presence in Guayaquil of yellow fever imported from Panama for a considerable number of years caused this city to be known far and wide as the "Pest Hole of the Pacific." Various attempts by the people and the Government of Ecuador to change this state of affairs had come to naught, because of the unsettled political conditions of the country and the consequent financial discredit.

Finally, in the year 1914, the Government contracted with the British firm of J. G. White & Co., Ltd., for the construction of a modern water-supply system to complement the existing one, which permitted service only during two hours daily, thus compelling the storage of water in small tanks and barrels for consumption during the rest of the day.

These tanks and barrels, several in each dwelling, mostly uncovered or imperfectly so, were ideal breeding places for the

* Sanitary Engineer for the Rockefeller Foundation International Health Board during yellow fever extermination campaign.

Stegomyia Fasciata or *Aedes Calopus*, that mosquito known to be the only transmitter of yellow fever, thus converting the city into an endemic center of the disease. Infant mortality rose to more than 50 per cent, many deaths being caused by yellow fever.

The Government also requested the aid of the International Health Board of the Rockefeller Foundation in the control and extermination of the dread disease. General Gorgas and other members of the Foundation visited the city several times; and, altho preliminaries were arranged, on account of the war active work was not started until November, 1918.

Meanwhile, also because of the war, work on the water system dragged along, much to the disgust of everybody concerned, and only during the last few months has the municipality been able to complete the financial arrangements necessary for the construction of the water-works, which will now be pushed to completion.



A VIEW OF BOULEVARD "9 DE OCTOBRE," GUAYAQUIL, ECUADOR
This street has an asphalt pavement, concrete curbs and sidewalks, and ornamental lighting



REINFORCED CONCRETE RESERVOIR UNDER CONSTRUCTION, GUAYAQUIL

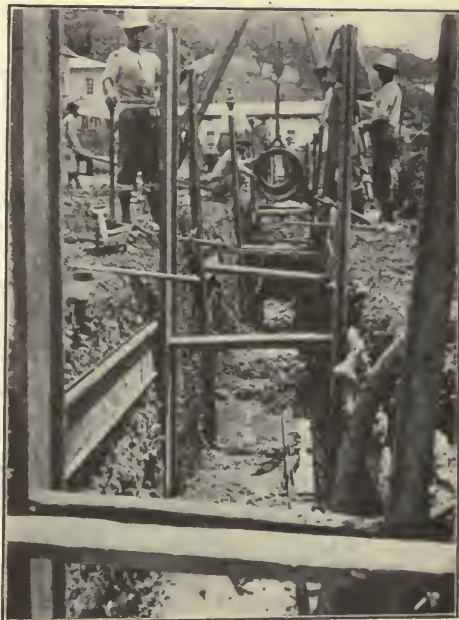
The capacity of this reservoir is about 6,300,000 gallons, making with the older reservoirs a total storage capacity of 10,000,000 gallons

In the five years 1914-1918 the contractors were able to complete the reinforced concrete reservoir of 28,500-cubic-meter capacity, which, added to the existing reservoirs, will give the city a reserve supply of over ten million gallons. They have also laid mains and branches thruout the city totalling 78 kilometers in length, and will now begin construction of the pipe line, over 55 miles in length, which will bring water to the city from the foothills of the Andes Mountains. This project also requires the laying of a subaqueous pipe over

a mile in length across the Guayas River.

The municipality, on its own account and thru its various juntas, has, during the last two years, and especially in the present year, been active in street paving work. Twenty blocks in the center of the city have been paved with asphalt, about fifty blocks macadamized, and a number of the streets paved with Belgian blocks laid in cement.

Water-front improvements are under way. A reinforced concrete market is under construction. A monument memorizing the independence from Spanish dominion has been inaugurated, and the city is now arranging for the building of an adequate city hall and a complete sewer system.



GROUND WATER NECESSITATED CONTINUOUS PUMPING WHEN THESE WATER-MAINS WERE LAID AT GUAYAQUIL, ECTADOR

The Quality of Citizenship

A man may labor quietly in his chosen field and never be known to the public generally and still be the very best kind of citizen. He may be engaged in the very lowliest kind of work, but if he does that work to the very best of his ability, and labors not alone for his own material welfare, but with the ultimate aim of helping others, he is a good citizen. If he works for himself alone with no thought for others he is not and cannot be a good citizen. In my opinion, unselfishness is the very foundation of good citizenship and good government.

—Ex-Mayor Herman C. Baehr, Cleveland, Ohio.

The Commission-Manager Form with Proportional Representation

EDITORIAL NOTE.—*The following paragraphs are from a report presented in October to the civic, labor, social, professional and business organizations of an important city. The report is the work of a Committee of Fifteen, appointed in accordance with the action of more than twenty-five representative local organizations. The name of the city has been omitted in abstracting the report for THE AMERICAN CITY, the purpose being to stimulate general interest in modern city charters and not to criticize the form of government of a particular municipality.*

THE government of a city is a great co-operative enterprise. Its only legitimate purpose is the common good of the people, and upon its success depends in no small degree the happiness and well-being of a great majority of those who live under it. The importance of the city government in the lives of our people will become greater and not less. In recent years its activities have steadily expanded, and this process is sure to continue in the future. As a result of this expansion of activities and of rising costs, the financial contributions which the people will be called upon to make for the support of the city government are certain to be greater in the future than in the past. The only return that can be expected for such contributions is in service rendered to the people. If, thru capable management, the return in service is adequate, this increased expenditure for government may well be a good investment even from an individual financial point of view. On the other hand, if, with increased financial burdens, the service rendered is not obviously greater, the present discontent and distrust of organized government will continue and become more marked.

There is no disguising the fact that we are confronted in this country, and particularly in the cities, with widespread lack of confidence in our governmental institutions. This lack of confidence is not confined to any one class. The substantial taxpayer voices it quite as frequently as the agitator who urges direct action. Their reasons may be different; the results are identical. At the same time the movement for greater democracy in government grows and it is clear that the only way out is forward and not back.

It requires only the slightest analysis of existing conditions to disclose the reasons

for this situation. Successful popular government must meet two tests:

- (1) Its policies must be a prompt reflection of the popular will formulated after the various elements in the community have been heard.
- (2) Policies once determined must be carried out promptly, effectively and without waste.

All the People Should Be Represented

To accomplish the first of these objects demands a legislative body that is truly representative. The present council of the city of ——— meets this test only imperfectly. In character and intelligence its members are doubtless fairly representative of the average citizen. However, the council does not number among its members the real leaders of the various important groups and interests of the city. As a result, its consideration of questions coming before it is lacking in penetration, its discussions are usually perfunctory and never of a high order. In spite of the honesty and average intelligence of its members, the people do not turn to the council with confidence for the solution of community problems. It is in no sense what it should be—a continuous round table dealing with city affairs.

Your committee believes that the creation of a city council which will meet the standard above indicated is absolutely necessary if our city is to have a government that will be either efficient or command the confidence of the public. There can be no hope that a council chosen by the present method will ever meet that standard. Men of the type needed in the council will not become candidates. The effort in time, money and energy that must be put forth by one seeking election to the council excludes many. The compromises which must usually be made both to secure office

and to be reelected are distasteful to men of force and independence.

The committee therefore recommends that the charter of the city be so changed as to provide for electing the council by proportional representation. The results that would follow such a change are not matters of theory or conjecture. The council would become thoroly representative of the more important interests and groups in the city, and therefore representative of the city as a whole. The leaders of opinion, now outside the council, would more and more be found in that body. The council would improve in ability. Majority opinion would prevail, but before decisions were reached every considerable minority group would have a hearing thru an accredited leader. The membership of the council would be more stable, and not as now subject to violent fluctuations thru the change of a few votes here and there in the city.

In order to secure these results it would not be necessary to elect the councilmen from the city at large, tho that can be done if public opinion favors such a change. The committee believes that the most satisfactory method would be to divide the city into a few relatively large districts, each choosing from five to nine councilmen. By this method the same results as to representation would be obtained as by election from the city at large, and candidates would be relieved of the difficult task of getting their views before the entire city. The division of the city into districts could not be abused in the interests of a party or faction, because with proportional representation gerrymandering is ineffective and useless.

The committee also believes that the council should consist of from fifteen to twenty-five members. Even a slightly larger number would not be undesirable.

The committee further recommends that the council so chosen elect one of its members as presiding officer with the title of mayor. In addition to his duties as councilman and presiding officer of that body, the mayor would be the ceremonial head of the city, acting as its representative in the various social capacities which now consume so much of the time of the chief executive of the city.

Public Policies Once Determined Should Be Promptly Executed

The committee believes that the most fruitful cause of the prevailing distrust of

government is the lack of effective administration. Even more than the unrepresentative character of our legislative bodies, this has sapped confidence in our political institutions. Only too often laws and ordinances representative of public opinion are rendered ineffective thru unintelligent and inefficient execution. Thru wastefulness, arising from careless and inefficient administrators, the people are constantly deprived of services which they have a right to expect. Too large a portion of the dollar appropriated for public purposes never benefits the voter in services actually performed, but fades away in the hands of untrained and careless public servants. For this condition it is not fair to blame any particular person or political party in the city. It is the natural product of the political administrative system set up by the present charter. It will be eliminated only when we devise means for excluding partisanship from the administrative service of the city.

The present charter places the execution of public policies in the hands of an elected mayor, who appoints, and may remove, all heads of executive departments. As a result we have a series of originally untrained and politically short-lived chief executives. Heads of departments are appointed primarily because they supported the mayor at the last election or will aid him in seeking reelection. The mayor represents a political party and therefore if he goes out of office as a result of a shift in party fortunes, all heads of departments go also. Thus we are in a continual process of training mayors and department heads, only to lose them about the time they become worth their salaries. Moreover, under the present system no mayor or head of department, however able or well-intentioned, can give his undivided attention to his executive duties. He must constantly prepare for the next election, and he usually insists that his subordinates give their time for the same purpose. In this manner the entire administrative service of the city is vitiated by partisan politics and its efficiency kept at a low ebb.

Another undesirable condition resulting from the present system is the lack of continuity in executive policy. Every new mayor comes in with a more or less new program. He may not be hostile to the chief projects favored by his predecessors, but, in the nature of the case, he feels that he must have a program of his own which

differentiates him from those who have gone before. That is good practical politics, but it is fatal to effective administration. It results in a constant shifting of emphasis and in the neglect or abandonment of undertakings begun under previous mayors.

The existing system also tends to prevent that careful planning for years ahead which is essential to the future development and highest welfare of the city. A politically chosen mayor is not easily interested in any undertaking that must be begun now but will not bear conspicuous fruit until after he is likely to be out of office. He is too much inclined to be impressed only by those issues with which a showing can be made before the end of his term. In fact, he is usually careful to hold back public work that could have been done sooner, in order that he may make a great show of activity just before election.

The successful administration of city affairs calls for well-trained executives. It is clear that such executives cannot be obtained by the present method of choice. Men of real administrative ability are usually averse to campaigning for public office. They are so much in demand in private employment that they will not go about begging the people to elect them to a job which they may lose at the next election. In fact, "we, the people" have been poor employers. We have set up, and are continuing, a system which makes it impossible for us to get the best talent to work for us. We shall be able to get capable persons to serve us in an executive capacity only when we can assure them of permanent tenure so long as they do their work efficiently. Other self-governing countries found long ago that executive talent could not be secured thru popular election. Nearly a hundred cities in the United States have already abandoned the attempt to do so. In taking

this step these cities have not only increased the efficiency of their governments, but have brought them more fully under popular control as well.

In view of these facts, the committee recommends that the council elected as already described choose a city manager to serve during the pleasure of the council. The manager so chosen would appoint all heads of departments, with the possible exception of the director of law and the city auditor. Theoretically, there are arguments in favor of having these officers chosen by the council, but in practice appointment by the manager has been found to work equally well, or even better. The manager would be responsible to the council for the effective administration of the departments placed in his charge and would advise the council either directly or thru his subordinates of the needs of the city.

Everyone admits that "politics" has no place in the administrative service of the city. The plan above outlined opens the way for its elimination. The people can trust a council chosen by proportional representation to appoint and supervise a city manager. Such a thoroly representative body is more likely than any other agency to choose a chief executive on the basis of fitness alone and to protect him in his work so long as he renders efficient service. While such a council may be expected to have differences of opinion on matters of public policy, its members can readily agree that policies approved by a majority of the council shall be effectively carried out.

There is nothing either theoretical or conjectural in the above recommendations. Every essential feature has stood the test of experience. City governments so constructed are proving themselves not only more efficient, but far more democratic than the type of government under which — finds itself at this time.

Child Labor Day

Child Labor Day will be observed thruout the country on Sunday, January 25, in churches; on Monday, the 26th, in schools; and on Saturday, the 24th, in synagogues. Our ideals of childhood are health, play, work, education; the development of the body, the mind and the spirit. For these things we assume that the community is responsible. The community spends its money for schools and playgrounds and nurses and doctors. And then we leave our job half done and allow the children to be half-educated, half-nourished, and to be exploited while they are immature. Secretary Lane says, "I believe in the value of work to the young—but not monotony, not anything that does not tend to make a more complete citizen in the long run."

San Diego's \$200,000 Community House and Playground

By Chester Geppert Wallis

Department of Playgrounds, San Diego, Calif.

ONE of the most completely equipped playground and community centers in the United States is situated in the little seaside resort of La Jolla, within the city limits of San Diego and within fifteen miles of the city proper. This beautiful recreation center was given to the city of San Diego by Miss Ellen Browning Scripps.

To few men is given the privilege of working out their dearest dreams with unlimited funds at their disposal, but Frank S. Marsh, Superintendent of San Diego playgrounds, was given this privilege when Miss Scripps expressed her desire of presenting to the children and residents of La Jolla a community house and a playground that would fulfill all requirements as a recreation center and public meeting-place, and turned over the entire working out of the plans and construction to the Board of Playground Commissioners and the Superintendent.

The Plan of the Grounds

Weeks of thought were put into the initial plans of men who hold the development of a community spirit to be one of the biggest assets of a growing city. The policy in the construction of the buildings and apparatus was to make everything of the very best,

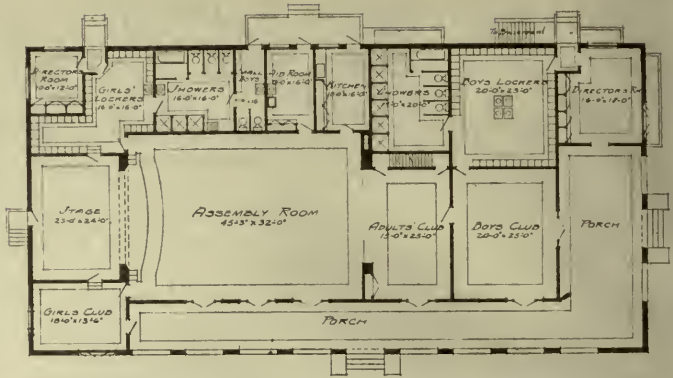
thus keeping deterioration and up-keep down to a minimum, and time has proved this policy to have been well worth the original outlay. The very best steel apparatus was installed, and the buildings were constructed of hollow tile and reinforced concrete. The tennis courts of reinforced concrete were colored with chrome oxide, producing a soft, fadeless green that mitigates the glare of the sun and sea.

The plot of ground covered by the playground is an irregular triangle of $2\frac{3}{4}$ acres, every square foot of which has been put to excellent use. A long pergola, which reaches from the community house to the three tennis courts at the rear of the grounds, divides the boys' playground from that used by the girls and smaller children. Each of the segregated sections has a tan bark pit, equipped with the usual playground apparatus—traveling rings, steel slides, pole slides, vaulting horses, flying rings and horizontal bars. Besides the apparatus in the pits, there are giant strides, swings for all ages, seesaws, volley-ball courts; on the boys' side there is a baseball diamond, balanced on the girls' side by a wading pool and sand boxes for the little ones. This pool is particularly attractive in arrangement and is the center of juvenile



THE COMMUNITY HOUSE IN SAN DIEGO, CALIF.

activity, particularly during the summer months when the older children are on the beach. A vine-covered pergola shades the sand boxes which surround the circular pool, and benches on the outer edge are utilized by the mothers, who sit with their sewing and mending while the laughing children splash happily in the sun-flecked water or romp in the white sand.



PLAN OF THE INTERIOR OF SAN DIEGO'S BEAUTIFUL COMMUNITY HOUSE IN LA JOLLA PLAYGROUND

The Buildings and Their Activities

The whole playground is an adaptation of the early Mission style of architecture and fits in with the quaint little seaside village as part of an exquisite picture—the pergolas and white walls of the community house with its shadowed arches standing out against a background of blue sea. The buildings consist of the community house and a five-room modern home for the use of the supervisor.

The community house, built with a view to providing facilities for club activities for all ages, is the joy of every resident in La Jolla. There is a boys' club room, with pool tables and many other inside games; an adults' club room, which is also used as a library and reading-room; a sunny club room for girls, the wide windows of which look out over a broad expanse of green lawn; offices for men and women directors; kitchen, showers and a first-aid room, as white and businesslike as a doctor's office.

Best of all, in the long assembly room is the diminutive stage. This stage, with its attractive setting, has given pleasure to thousands of people and is thoroly equipped. There are tiny sets of scenery for every occasion; footlights, overhead lights, side lights—in fact, the electrical equipment will permit of almost any theatrical illusion in the way of lighting, from early dawn to rosy sunset or purple twilight; there are also spot lights and a moving picture machine. The "Village Players," an organization working on the lines of the Little Theater movement, give a group of plays here once a month that is arousing much comment. A lecture committee provides

free lectures weekly. Every Sunday evening a community meeting is held, presided over by ministers and representatives from all the churches. Community sings, supper parties, children's parties and many other activities take place in this spacious auditorium.

Since the beginning of the war, bi-weekly dances have been held on the tennis courts, and classes of instruction have been held inside for them by the directors, in coöperation with the War Camp Community Service. There are folk and rhythmic dancing classes, kindergarten and gymnasium classes for both boys and girls. The Girl Scouts, Boy Scouts and Campfire Girls claim the playground as their headquarters. Under the leadership of the director of men's and boys' work, a system of military drill has been instituted similar to that used to condition the new men in the army camps. Dramatic clubs, story hours and glee clubs are among other activities, and week-end tennis tournaments take place the year around.

The Purpose of the Playground

The construction of La Jolla playground represents an outlay of 200,000. It has been deeded to San Diego by Miss Scripps with the understanding that it be used for no other purpose than that of a community center and "as a meeting place for public gatherings for the discussion of all questions of interest to the public or any part thereof; and the said premises and buildings (except one dwelling thereon while used as a residence of the supervisor and his family) shall be opened for the purpose of such meetings to anyone desiring the

use thereof for that purpose, and no speaker shall be denied the privilege of the premises or buildings thereon on account of the utterance of any opinions that he or she may give utterance to, provided that while using said premises he or she shall not

contravene the laws of the state of California or of the United States."

La Jolla playground is maintained by the city of San Diego as a part of the San Diego playground system. An average daily attendance of 220 is recorded.

Motor Trucks Move Elk to Game Refuge

San Diego, Calif., Reduces High Costs of Zoo Maintenance

By Allen H. Wright

"**B**ACK TO NATURE" was the ultimatum reached by the Board of Park Commissioners of the city of San Diego, Calif., recently when the matter of maintenance of the herd of elk in the big Balboa Park was under consideration. Probably the high cost of hay and grain proved a controlling factor in the decision. The herd of elk had been a great attraction at the park for several years, dating back to the Panama-California exposition, which helped to place San Diego prominently on the map, and it required strong considerations to bring the Park Commissioners to the decision to dispose of the animals.

It happens that the Cleveland National Forest, which includes San Diego County, has within its bounds a game refuge within which it is unlawful to kill any but predatory animals, and it was decided to send the elk to that preserve.



TRANSFERRING ELK FROM BALBOA PARK, SAN DIEGO, TO THE LAGUNA MOUNTAINS



LIBERATING THE ELK IN THE GAME REFUGE IN THE WILDS OF THE MOUNTAINS

One of the big municipal auto trucks was requisitioned for the transfer, and twelve of the animals, including three bucks and nine does, were loaded on the car, the sides being carefully padded to prevent injury to the elk in traversing the seventy-five miles to the Laguna Mountains, the particular portion of the reserve which had been selected as the spot for freeing the animals.

The transfer was effected in eight hours, and the elk have since been free to roam over the mountains, where there is plenty

of brush and grass for their feed and running water for their drink. While the winters may be rather severe after the mild climate to which they have been accustomed in San Diego, the animals can easily go down the easterly slopes of the mountains into the Imperial valley, where milder weather will be found.

One buck and three does were retained in the elk paddock at Balboa Park for the pleasure of the children and other visitors, including the amateur photographers, who enjoy studying the animals.

The Foundations of Our Citizenship

By Fred A. Gannon

IN the beginning, the builders of our citizenship laid strong foundations. It is worth while to examine them in these days of struggle to advance our Americanism. They teach valuable lessons.

In early New England, a man becoming a citizen was required to take this oath:

"I do solemnly bind myself, in the sight of God, that when I shall be called to give my choice touching upon any such matters of state in which freemen are to deal, I will give my voice and suffrage as I shall judge in my own conscience may best conduce and tend to the public weal, without respect of persons or favor of any man. So help me God in the Lord Jesus Christ."

Two of the stoutest stones of the foundations of the political body—God and conscience—are bound up in that oath. No outlawry, nor anarchy, no Bolshevism when that oath abode.

Profession of citizenship did not suffice in olden days; practice of it was required. One of our early laws was this:

"Ordered that the military officers in every town shall provide that the watches shall be duly kept in places most fit for our common safety, and, also, ward on the Lord's Day; and every person above the age of 18 years (except magistrates and elders of the church) shall be compelled to serve in person, or by some substitute."

That was compulsory public service. It was more than compulsory military service. Each citizen was required to stand watch and ward, to guard against attacks

by Indians, thievery, fire and other foe of the common safety. Each citizen took his turn in being policeman. He was also required to train with the militia.

Later, there was another order requiring each householder to keep a ladder by his house. That was for use in fighting fires on roofs, caused by sparks from the chimney. Next came the volunteer fire department, whose members volunteered to fight fire. In early days, also, each householder was responsible for his individual water-supply system, and the disposal of his sewage. At one period he kept in repair the road before his home.

Now the public service is responsible for the policing of the city, for fighting fires, for the supply of water, the disposal of sewage, the streets, and other things for the common welfare. But the responsibility of the citizen has not altered one iota, save as it has increased with the growth of the public service; for as a voter and thru his citizens' organizations he is now able to promote the welfare of the entire community.

Yet to shirk the responsibility is common everywhere. If we turned back the pages of history, and taught more of the principles and practices of our early citizenship, preaching them from the platform, and reciting them in our public schools and our public gatherings, we should have a stouter citizenship and a stronger Americanism.

Forward Steps

Reported to **THE AMERICAN CITY**
by **Municipal Officials & Department Heads**

Mayors

New Municipal Building and Central Heating Plant

MINERAL POINT, WIS.—A new combined municipal building, auditorium and public library has recently been completed at Mineral Point at a cost of \$60,000. The money for construction was borrowed from the school fund of the state of Wisconsin, and the city is paying back the bonds as they become due.

The building contains a theater, seating about one thousand; a public library, which is very commodious; offices for all the city officials; a large assembly room for the use of the City Council, and a rest room for women from the country and other visitors.

The council room is in use a great deal of the time for various civic meetings, such as those of the women's civic club, meetings to promote good roads and federal activities, and all small gatherings in which the public are interested. The theater is used for school entertainments, graduation exercises, political meetings, receptions for returned soldiers, and meetings of a similar character. A theater committee provides for public entertainment, including musicals and theatricals, which are run at a small profit to the city.

A central heating plant is now under construction, and it is planned to use this not only for the benefit of the city building

but for all of the business portion of the city. The merchants and others interested are taking stock in the heating plant, and the city is the largest stockholder. It is a corporation, and the idea is to charge such a price for heating that the income will yield a small profit after paying all expenses. The city will share in the profits with the other stockholders.

JAMES W. HUTCHISON,
Mayor.

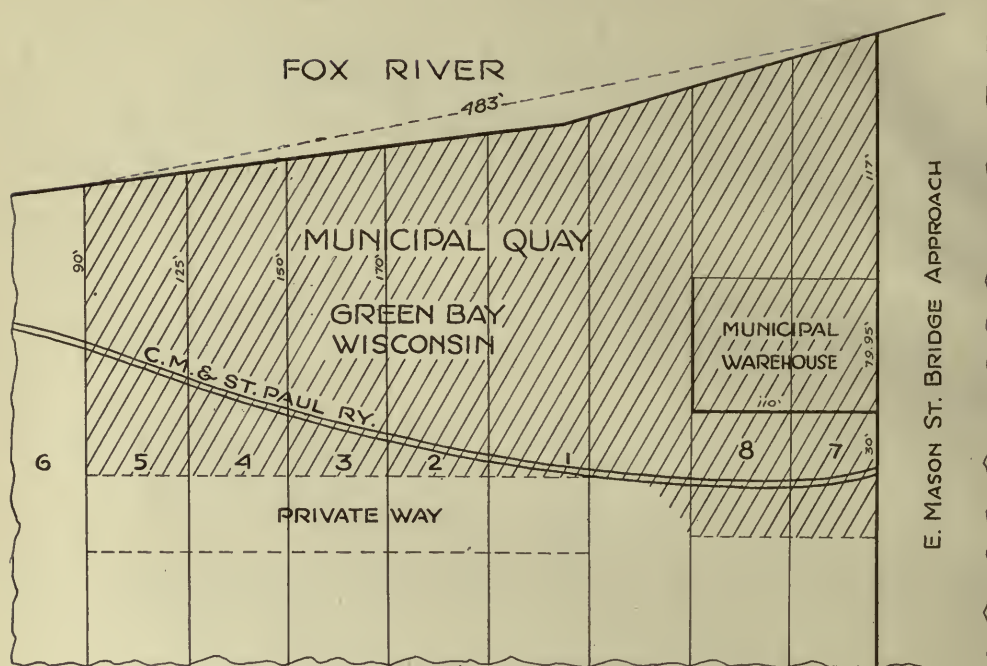
The City of Green Bay Bids for Great Lakes Traffic

GREEN BAY, WIS.—Realizing that the traffic on the Great Lakes is only in its infancy and that its development is largely a matter of providing adequate public dockage facilities, Green Bay began the construction of municipal docks last year.

Considering the time that work has been under way, the progress has been very satisfactory. The anchor and sheet piling is nearly all driven. This will be filled by dredges to a grade of 4 feet above the



THIS NEW BUILDING IN MINERAL POINT, WIS., HOUSES THE MUNICIPAL AND CIVIC ACTIVITIES OF THE CITY



PLAN OF MUNICIPAL QUAY, GREEN BAY, WISCONSIN

U. S. datum line. The cost of the dock when completed will be about \$45,000. The Council has authorized the purchase of the dock, to be completed by the grantor, and has also taken the necessary proceedings to raise the money by bond issue.

Under the state laws of Wisconsin, after the passage of a bond ordinance for a proposition of this kind, the law permits the taking of a referendum vote by the electors upon the presentation to the Council of a petition signed by 10 per cent of the number of electors who voted at the last gubernatorial election. Such a petition has been prepared and submitted to the Council of Green Bay.

When the wharf has been purchased by the city it will be used not only as a boat landing and freight house, but as a storage place for municipal street and bridge material. It is anticipated that a large saving can be made by the city in the purchase of crushed stone, as it will be possible to buy it delivered at the dock at \$1 per ton less than it can be bought and delivered by land. If found desirable, the dock can be used by the city for storing the supply of coal for schools and public buildings after the purchase when the price is most favorable.

There also has been under consideration a proposition to use part of the warehouse and wharf for a city market. This will be much to the benefit of the city, but the final working out of the proposition must necessarily wait until the work is completed, some time during 1920.

ELMER S. HALL,
Mayor.

City Managers

Wooden Shingles Barred in Grand Rapids

GRAND RAPIDS, MICH.—On October 20 the City Commission of Grand Rapids approved an ordinance requiring the use of incombustible roofing material. It is not as stringent or effective an ordinance as was first proposed, but even in its present form it will be of great assistance, particularly as the fire district in which no combustible roofing materials can be used has been materially enlarged.

The ordinance provides, in short, that after the 1st of March, 1920, "it shall be unlawful for any person, firm or corpora-

tion to place, rebuild, repair or erect a roof upon any building within the limits of the city of Grand Rapids which roof shall be covered with wooden shingles or any other equally inflammable materials; providing, however, that quarter-sawed shingles may be used, or any fire-resisting composition shingles which shall be approved by the Building Inspector and Underwriters' Laboratories." Violation of the ordinance is punishable by a fine not exceeding \$100 and the cost of prosecution, and in default of payment the court is empowered to sentence the offender to imprisonment in the county jail or city jail or workhouse for a period not exceeding ninety days. Ninety per cent of the roofs that are being replaced now are of incombustible roofing material. Once in a while there is one that is being shingled with wood shingles, and after March 1, 1920, as indicated by the ordinance, this danger will be eliminated.

FRED H. LOCKE,
City Manager.

Winnetka Eliminates Large Billboards

WINNETKA, ILL.—In the effort towards civic improvement, of which the new city plan described in the October issue of *THE AMERICAN CITY* is the major part, Win-

netka has adopted an ordinance looking toward the elimination of billboards.

This ordinance is very brief. It prohibits billboards larger than 9 square feet anywhere in the village except in strictly business territory. While this ordinance may develop some fatal weakness if it ever has to meet the test of the courts, we have nevertheless succeeded in enforcing it in every instance so far without a contest. As a result we have in this municipality of nearly 7,000 persons only two large billboards. As these are located on the roofs of lumber sheds, it has not seemed advisable to insist upon their removal.

H. L. WOOLHISER,
Business Manager.

City Engineers

Permanent Paving Replaces Macadam

FREELAND, PA.—The Boro Council of Freeland has decided that a permanent paving program should be established. Arrangements have accordingly been made to pave two or three streets every year with



NEW PAVING ON CARBON STREET, FREELAND, PA., LOOKING WEST

asphalt. The first work to be completed under this new program has recently been finished on East Walnut and East Carbon Streets, at a total cost of \$18,690 for both streets. This figure excludes the cost of new sewer catch-basins and inlets, which were built of concrete. Both the streets had flagstone and concrete curbing and sidewalks, which were laid about three years ago, when many improvements were made by the respective property owners.

In the construction of the new Amiesite pavement, the former macadam road was excavated to a given grade and a 4-inch concrete base was laid. Instead of using crushed stone in the concrete, $\frac{3}{4}$ -inch slag was used, and an excellent job resulted. The slag was substituted for stone because it can be secured locally fully as cheap as an equivalent grade of crushed stone. This pavement was laid to a compressed thickness of 2 inches on the concrete base. The work was executed in about 61 days and covered 7,195 square yards from curb to curb on a 28-foot street. It was done by a contractor under the supervision of the Boro Engineer.

THEODORE REICHMANN,
Boro Engineer.

Fire

Increased Inspection Reduces Fire Loss

EL PASO, TEX.—The fire inspection report blank reproduced below has been devised by the Fire Department of El Paso and has proved a great success in reducing the fire loss. The blank is printed on fairly good white stock and is issued to the inspectors in pads $3\frac{3}{8}$ inches wide by 8 inches long. With one of these pads before him, the inspector can readily note all the defects in the structure under consideration and cannot neglect any of the important features.

Of prime importance is the action taken on the reports as they are received by the Fire Department. They are not allowed to accumulate to any degree, but immediately upon receipt the owner and the tenant are consulted in an endeavor to remedy immediately all conditions which might prove detri-

mental to occupants and property. Thru this activity the fire alarms were reduced from 471 alarms in 1917 to 301 alarms in 1918, with an estimated reduction in losses from \$412,247.70 to \$211,690.19.

We attribute this decrease in the number of alarms and the fire loss to the rigid fire inspection and fire prevention campaign car-

EL PASO, TEXAS

Fire Department

INSPECTION REPORT

No. _____

Date _____

Location of Building _____

Construction of Building _____

Occupancy of Building _____

Owner or Agent _____

Name of Tenant _____

Condition of Floors _____

Condition of Chimneys _____

Condition of Basement _____

Condition of Elevator Shaft _____

Condition of Attic _____

Condition of Stairways _____

Heating Appliances _____

Condition of Aisles _____

Condition of Windows _____

Condition of Areaways _____

Alley or Yard in rear _____

How Lighted _____ Is Lighting Safe?

Is any Explosive stored or kept on Premises? _____

If so, where? _____

Any Gasoline kept on the Premises? _____ How much?

If so, where? _____

Remarks _____

Signed _____

Inspector.

No. _____

Company.

THE USE OF THIS BLANK HAS HELPED TO REDUCE THE FIRE LOSS IN EL PASO

ried on during 1918. The work has not relaxed, and it is hoped that before the end of the current year another record for few alarms and low fire loss will be established in El Paso.

JOHN W. WRAY,
Fire Chief.

Smashing Glass in Fire Boxes a Costly Amusement

WALTHAM, MASS.—Considerable annoyance to the city resulted from the breaking of glasses in keyguards attached to fire alarm boxes at Waltham during the past year. Altho the expense of each glass was small, about 4 cents, the number broken each year made a large total. During 1918 as many as 1,500 glasses were broken. In addition to the expense of the glasses, a large amount of time which could have been used to better advantage was spent in replacing this protective feature. Considerable publicity was given to this loss thru the Waltham Municipal Bulletin, and it was found that very good results were thus accomplished.

There are three distinct types of fire alarm boxes, one which is in circuit at all times when the circuit is in operation and can be pulled when an alarm is being registered from another box. This is one of the oldest types of boxes in use at the present time and is dangerous to have in any fire alarm system. The second type has a restoring pin, so that when the door is closed a pin automatically restores the plunger and the box may be pulled again. If this box has been left open from any cause, as when some child smashes the glass in the door and opens the box to see what is inside, the box is cut out if an alarm occurs or if a test blow is struck on the system. In order to put the box back into circuit, it is necessary to close the door to restore the armature. It is in this type of box that most trouble has occurred, and glasses are replaced at once in order that

we may be sure that the box is in working order. The last type of box in use in Waltham is absolutely non-interfering, and is the best and safest type made. It may be pulled at any time, and, if another box is transmitting an alarm, will remain inactive until the other box has completed its alarm, and will then come in and transmit its number.

It was the second type of box that caused so much trouble and led to the publication of the item in the Municipal Bulletin. Since publicity was given to the trouble, the schools have been instructed in the use of the different kinds of fire alarm boxes. A communication was sent to each teacher, and all the children were taught how to use the boxes and what had been the results of tampering with them. The month before this educational work was undertaken, over ninety glasses were broken, but during the following month there were only ten.

ARTHUR L. HOLBROOK,

Inspector of Wires and Superintendent of Fire Alarm.

Parks

A City's "Vacation Village"

ST. LOUIS, Mo.—Thru the coöperation of the St. Louis Red Cross Chapter and the Division of Parks and Recreation of the city, a "Vacation Village" was conducted in Forest Park during the month of August. This camp was situated in a quiet wooded section of the park, out of sight of automobilists and pedestrians. Here needy families



THE VACATION CAMP CONDUCTED BY THE DIVISION OF PARKS AND RECREATION, ST. LOUIS, MO.

recommended by various social organizations found respite from congested quarters and the intense heat.

The village was carefully planned and laid out by the Division of Parks and Recreation. Birch bark walks ran between rows of tents which were the living quarters of the families. Each tent was placed on a wooden floor so that the occupants were protected from the damp ground. Toilets, showers, water-supply, lighting system, kitchen, dining-tent, flagpoles and a well-equipped playground were installed by the Division of Parks and Recreation. Supervision, matron, cook, dining tents, cots, bedding and cooking utensils, etc., were furnished by the Red Cross Chapter. A common kitchen was conducted under the auspices of the Community Kitchen organization, and 1,828 meals were served to the 235 guests of the village at the average cost to the guest of 11 $\frac{3}{4}$ cents per meal.

This village ran practically three weeks. All connected with it have recommended that the camp be conducted on a much larger basis next year and for a longer period of time.

NELSON CUNLIFF,
Commissioner of Parks and Recreation.

Ornamental Stairway Built by Park Board

DUBUQUE, IOWA.—The ornamental stairway shown in the accompanying illustration is the main entrance to Madison Park from North Main Street, Dubuque. It is one of the finest examples of concrete construction work in this part of the country. As will be seen from the photograph, the stairway consists of seven sections with six landings, which are adequately lighted so that pedestrians may use the stairway at night in comfort and safety. In summer



ENTRANCE TO MADISON PARK, DUBUQUE, IA.

the ornamental vases are filled with flowers in place of the evergreens shown in the photograph. If it were not for the attractive stairway entrance Dubuque's upper level park would be used much less than it is.

The dimensions of the stairway are as follows: total length, 200 feet; elevation, 85 feet; steps, 5 feet wide; treads, 12 inches in the clear; risers, 6 inches high.

In the construction of this stairway we used 90 barrels of cement, 90 yards of gravel, 15 yards of sand and 2,373 feet of lumber. The building operation occupied 3,151 hours. The cost account was as follows:

Labor	\$1,183.95
Light	557.62
Iron and steel	465.04
Sand, gravel and cement	419.55
Hardware	246.48
Lumber	108.33

Total expenditure \$2,980.97

HERBERT ADAMS,
Secretary, Dubuque Park Board.

"Penny Wise and Pound Foolish"

This old proverb is often called into service, but what policy could be better described in these words than that of municipalities failing at this time to sufficiently increase the salaries of their experienced city engineers, water-works and lighting superintendents, fire chiefs, street superintendents, city clerks, health officers, park and playground superintendents, etc., so as to retain the valuable services of these officials and profit by their experience at a period in the world's history when experience and efficient service are so essential? What advantage is it to any municipality to save a few hundreds or thousands of dollars on its salary account and thereby lose tens or hundreds of thousands thru the replacement of able department heads with the inexperienced and inefficient substitutes which are all that can be secured at the inadequate salaries now paid?

Fire Protection for Schools

Various Common Hazards in Schools and Methods of Reducing Them

By H. W. Forster

IT is a far cry from the little red school-house on the hill, with its one room, its handful of pupils, its chief fire hazard—the stove, its bucket of water, and its doors opening into the yard, to the modern city school, several stories in height, housing hundreds of children and presenting complicated problems of fire prevention, fire protection and egress.

While considerable improvement has been made in the last decade in the construction of new buildings, and also in the improvement of many existing structures, the fact remains that the large majority of schools in use to-day may become charnel houses instead of effective agencies of human advancement. Generally in event of fire the children escape, but occasionally heaps of charred bodies of little children scathingly rebuke the judgment exercised and the parsimony practised in the fields of creating greater safety in schools.

No matter how great may be the poverty of an educational institution, it should not disregard any fire precautions that are relatively inexpensive, and it should spend at least a moderate sum each year for the gradual improvement of its most dangerous buildings. It is preposterous to assume that this country cannot spend tens of millions of dollars, if necessary, to safeguard its school children. It is preposterous to assume that American communities require the experience of a Collinwood horror or a Peabody holocaust to prove to them the shortcomings of their school conditions.

Obviously, the way to escape fire danger is to have no fires. That means fire prevention. Fire prevention has to do with removing the causes of fire, and covers the proper handling and storage of oils and other hazardous materials, the proper housekeeping measures, the disposal of waste of various kinds, the proper installation, inspection and maintenance of lighting and heating equipment, and attention to other similar fire hazards. Many of these fire prevention measures are mechanical, but a far greater number depend upon hu-

man inspection and performance. It is regrettably true that the human factor cannot be depended upon, and that is chiefly why fire prevention measures alone are insufficient.

The ordinary grammar school has fire hazards limited largely to heating and lighting systems and to poor housekeeping. The more modern schools, especially high schools and trade schools, contain the hazard created by the use of power-operated machinery, combustible working materials, inflammable liquids, chemical laboratories, etc. The following subdivisions of the causes of fire present the principal facts which a school management should know in order to secure a considerable degree of safety.

Hazardous Materials

Gasoline, benzine, alcohol and combustible metal polishes are commonly used by janitors and in connection with technical courses. Their use should be restricted, the amount on hand reduced as much as possible, and necessary amounts kept in approved safety cans designed to prevent spilling, leakage or explosion. Lubricating oil, lard oil for cutting metals, linseed oil, turpentine and kerosene frequently find their way into schools in astonishingly large quantities. Some of these liquids are spontaneously combustible, all burn fiercely, and fire in them is hard to extinguish. All volatile liquids, oils and paints should be stored outside of main buildings, or, in cases where this is not feasible, in a fire-resistive vault.

The use of motion picture films in public schools should be given the most careful supervision, and where inflammable film is used should be allowed only with approved machines, properly installed in fire-resistive booths, and attended by licensed operators.

Waste, rags and mops used for cleaning purposes are subject to spontaneous combustion, especially if oily, and should be burned immediately after use, kept in metal cans, or washed thoroly and hung up. Clean waste and rags should always be kept in covered metal waste cans or barrels.



Courtesy of American Concrete-Steel Company

BRICK AND WOOD-JOISTED SCHOOL BUILDING

This building has the same plan and cost as that shown on opposite page. The interior construction is of wood, with wooden cornices and stamped metal ceilings

Waste paper should be removed from the classrooms at the close of each school day, and should be burned, taken from the premises, or baled and stored in an isolated building or fire-resistive vault. In smaller schools it is common practice to burn waste paper and rubbish in the back yard. A covered wire incinerator will prevent the blowing about of burning papers. All fires should be carefully watched. In large schools these materials are frequently burned under the boilers, and it is sometimes feasible to install a special incinerator for this purpose.

Shavings are constantly accumulating in large woodworking shops. Fire spreads rapidly over floors and benches strewn with shavings. It is good practice to clean up the woodworking rooms between classes in order to keep the accumulation as low as possible. Shavings, when swept up, should be placed in covered metal receptacles and should be burned or removed from the buildings each night. Raffia is used in many schools where courses are given in basketry or millinery. Supplies should be kept in covered metal containers or fire-resistive vaults. Packing materials should be disposed of as soon as shipments are unpacked, and all paper, excelsior and other combustible materials kept on hand for packing pur-

poses should be stored in a vault, in covered metal cans, or in covered metal or metal-lined bins.

In some of the more modern schools the auditoriums and assembly halls are provided with stages which are equipped with scenery for use in connection with amateur theatricals. In such cases the laws governing fire protection in theaters should be enforced. All scenery should be fireproofed, and a fireproofed proscenium curtain should be provided.

The use of holiday decorations in schools involves serious fire hazards. Christmas trees are probably the worst offenders, and in connection with these, candles, cotton trimming and the cotton suit and whiskers for Santa Claus should be avoided. Electric lighting should be used on the trees; asbestos or mineral wool should be substituted for the cotton; tinsel and glass should be used instead of paper garlands; and paper wrappings should be removed from packages as soon as possible.

At least once a year every school should be gone over from basement to attic to make certain that every bit of rubbish and unnecessary materials is removed.

In place of the old wardrobes and hall lockers, the modern tendency is to provide central locker rooms with metal lockers.

New lockers, no matter where located, should be of metal and have solid backs and side partitions to prevent spread of fire between them. Screen or punched plate doors are preferable, to admit of inspection without unlocking.

Dangers From Lighting Systems

The insurance interests report that in 1916, 86 fires from electrical causes resulted in a loss of \$585,054 in schools. In 1917 the number of fires from this cause was 70, with a property loss of \$500,307. Electrical fires are therefore a very definite hazard in schools. The National Electrical Code, as issued by the National Board of Fire Underwriters, contains specifications covering every detail of electrical installation, and compliance with these specifications will eliminate practically all fire hazard in connection with electrical equipment.

To secure safety from gas lighting, the essential steps are:

- a. Proper clearance over mantles and burners. Three feet is ordinarily necessary with a Welsbach mantle, and two feet with a flat-flame burner. Lesser distances than this require heat bells.
- b. No swinging brackets where flames can come into contact with any combustible material.
- c. Wire guards for flames to prevent people and materials from coming in contact with them.
- d. Elimination of key control for gas lights where pupils might play with them.

Kerosene is still used extensively for lighting in rural schools. Good practice requires that kerosene lamps be cleaned daily, that burners be kept clean, that wicks be of proper width and length, and that filling be done only by daylight.

Heating Hazards

The records of the Actuarial Bureau of the National Board of Fire Underwriters show the reported school heating hazard fires to have been as follows during the years of 1916 and 1917:

<i>Causes</i>	1916		1917	
	No. of Fires	Loss	No. of Fires	Loss
Stoves, furnaces, boilers, and their pipes.....	318	\$464,814	307	\$645,725
Chimneys, flues, etc., overheated or defective.....	296	430,370	247	301,365
Hot ashes and coals, open fires.....	56	32,277	64	37,501
Steam pipes	2	25	7	1,008
Total	672	\$927,486	625	\$985,609



Courtesy of American Concrete-Steel Company

**A REINFORCED CONCRETE SCHOOL BUILDING WITH NOTHING TO BURN.
THE MAINTENANCE COSTS AND DEPRECIATION ARE MINIMIZED**

In the operation of stoves, care of stovepipes and chimneys, and disposal of ashes, janitors are prone to be careless. The fire dangers involved are so severe as to merit careful and regular supervision.

The cutting of construction expenses by setting beams and floor joists into the brickwork of chimneys is poor economy. The minimum specification for a brick chimney in a building of more than one story is 8-inch walls and a flue lining. For one-story buildings with an ordinary stove a 4-inch chimney with flue lining may be built directly on the ground. All chimneys and pipes should be thoroly cleaned each fall before fires are started.

The hazard of cracked stoves and of poorly supported stovepipes with open joints is obvious. While stoves and furnaces should be operated in a manner to prevent overheating, they should be so located that serious overheating will not set fire to the building or to near-by storage. Any woodwork heated to 150 degrees Centigrade or over for any length of time is liable to ignite, and all heating apparatus must be installed with this fact in mind. Boilers and furnaces should always rest directly on the ground or on absolutely incombustible construction; never on wood, even if protected. Where stoves must be placed on combustible construction, they should be raised on legs or supported beams at least 6 inches and preferably 12 inches from the floor, ventilation being thus afforded. Floors should be protected over a liberal area with metal on asbestos.

In addition to the usual heating devices, schools are likely to have in them hot plates used in domestic science courses, glue heaters in woodworking shops, forges, annealing furnaces and blow torches in blacksmith shops, stoves, mangles and irons in laundries, and gas heaters at lunch counters. In connection with all of these there are fire hazards which must be guarded against.

Ashes, apparently cold, are responsible for many fires, and the danger is increased materially by mixing combustible rubbish with them. Ashes while inside of buildings belong in covered metal cans or on cement floors away from woodwork.

The possibility of fire occurring thru contact of hot steam pipes with woodwork is questioned by many, but the danger has been definitely established. In the case of the Collinwood School fire, the official ver-

dict was that a steam pipe passed thru a closet near the foot of the stairs and was undoubtedly the cause of the fire which destroyed 175 lives. Proper insulation or air space should be provided about all steam pipes where they pass thru floors or partitions. Where there is danger of combustible material coming in contact with the hot pipes, guards should be installed or the pipes should be covered with insulation. In cloak-rooms, where clothing is apt to hang against radiators, these should be protected with wire screen guards.

Matches and Smoking

The insurance reports indicate that smoking and match hazards were responsible in 1916 for 118 fires involving a loss of \$204,726, and in 1917 for 274 fires involving a loss of \$259,287. It is obvious that smoking should not be allowed on school property at any time. Children should not be allowed to bring matches to school. Where matches are used in the course of school affairs, they should be of the safety type. For gas lighting regular friction lighters should be provided.

Fire Extinguishers

The next best thing to preventing a fire from starting is seeing that any fire that starts is invariably extinguished while it is still small. The *automatic sprinkler* system is beyond question the most dependable device for accomplishing this, as is witnessed by a remarkable record of performance covering thirty-five years. The sprinkler, if properly maintained, is on duty day and night, goes into action as soon as the fire reaches modest proportions, is not affected by smoke as are human fire-fighters, and can be arranged to give an alarm the moment water flows from the sprinkler system. There has been a tendency on the part of school boards to find that it would cost too much to install sprinklers thruout the schools and to assume that because the whole sum needed was not forthcoming no beginning should be made. If sufficient funds can be found to sprinkler the basement of the worst building, a worth-while step will have been taken.

In high schools and colleges, especially where these are without public protection, there is generally advantage in an installation of *inside hose*, provided that there are trained persons to use the equipment to advantage. In all schools a hose connection

should be provided in the boiler or furnace room to wet down ashes and to use on incipient fires.

Approved *extinguishers of the soda and acid type* should be distributed thruout all school buildings. From any point in any school corridor at least two fire extinguishers of this type should be plainly visible and located not more than 100 feet apart. At least one extinguisher should be placed in each laboratory, woodworking shop, basement or other place where there is any special hazard. It is, of course, essential that the teachers and older pupils should understand the operation of the extinguishers and that the maintenance of the apparatus should receive constant skilled attention.

A *pail of water* is the oldest, cheapest and most generally used fire-extinguishing agent. It is difficult, however, for anyone to throw water accurately from a pail for any distance, and it is therefore advisable to install water pails chiefly in basements, woodworking shops, storerooms and attic spaces where burning material is likely to be on or near the floor. Pails should be filled with clean water and regularly inspected. To paint them red, stencil them "For Fire Only," and reserve them strictly for fire-fighting purposes, is the usual rule. Pails should preferably be of 10-quart capacity.

Sand is an effective extinguisher of fires in oil or electrical equipment, but should never be used about motors or generators because of possible damage to equipment. Sand pails, provided with scoops for scattering the sand, should be placed near switchboards and similar electrical apparatus and close to all storage places for oils and paints.

A *heavy woolen blanket* should be provided for each chemical laboratory or domestic science cooking room to smother fires in clothing.

Fire brigade organization should be limited to older boys, carefully selected. These should be organized and trained under the direction of an experienced fireman to handle whatever equipment is available. Generally speaking, there should be at least ten members. These boys should be thoroly instructed in the principles of fire prevention and fire-fighting and drilled about once in two weeks. From an educational standpoint it is very important that as many boys as possible receive the benefit of fire-

fighting training. For this reason it is good practice to rotate the membership.

Egress for Occupants

It should be possible to empty a school building of ordinary height and ordinary construction in not more than three minutes; two minutes are preferable. Elements that need consideration are:

- a. An alarm system for prompt notification of fire or of drill
- b. Proper individual room aisles to admit of quick marshaling of children
- c. Adequate door or doors to corridors, to inside stairs directly, to other rooms, or to outside towers or escapes
- d. Sufficiently wide, straight, unobstructed halls
- e. Stairs ample as regards number and width, with hand-rails, and preferably with enclosures and separations to protect against smoke blocking all stairs
- f. Direct exit from stairs to outside without forcing pupils to enter lower halls
- g. Special egress facilities for auditoriums, gymnasiums, lecture rooms and other points where large numbers of persons congregate
- h. Carefully planned and frequently held egress drills

It should be remembered that altho on one day 600 children marched out of the Peabody School in 1½ minutes during a fire drill, on the next day 21 of these very children lost their lives in that building because of the poor construction and lack of proper control and variation during fire drills. Nor does the regular fire drill of pupils lessen the hazard when schools are used for public gatherings. On all such occasions, as soon as the audience is seated, its attention should be called to the location of exits, the manner in which these should be reached, and the need for self-control if fire occurs. During larger gatherings of this sort uniformed policemen or firemen should be stationed in the hall to take charge in event of emergency.

The organization for conduct of fire drills in schools should coincide with the organization which handles the daily routine of the school. Where pupils must perform special duties, such as opening doors, playing music, etc., their movements should be carefully planned so that they will carry out their duties without confusion or special instruction.

As soon as a teacher has marshaled her class out of the building and to its designated place at a safe distance, she should

call the roll of her class at once and as rapidly as possible. The teacher should keep her attendance record up to date and should procure this the moment the fire alarm sounds. The value of the roll call was clearly demonstrated at the Wellesley College fire, when it showed eight girls missing after it was thought that all were out of the burning buildings. These eight girls were found asleep and were rescued.

Boards of education should require principals to render regular reports of fire drills held in their schools, including time of drill, weather conditions, number of pupils and time taken for egress.

Prevention of Spread of Fire

The almost lightning-like speed with which many fires spread is generally due to a combination of combustible construction, large unbroken areas, open stairways, and various floor openings. In contrast to such a school is the modern fire-resistive structure in which the amount of combustible material is reduced to a minimum, the fire areas are moderate, each room is capable of confining within its limits a fire of considerable intensity, egress stairs and other shafts are enclosed, and there are two ways out from each important point.

There is no excuse for anything but the best construction for new schools. The difference in cost between good and distinctly dangerous construction is never enough to warrant exposing our children. The literature of the National Board of Fire Underwriters, the National Fire Protection Association and the National Education Association is particularly valuable to the architect called upon to design a new school.

It is especially important that where additions are built to existing buildings the new construction be modern from a fire standpoint, and that there be a definite fire cut-off between the new and the old sections.

Obviously our fire dangers lie chiefly in our older schools two stories or more in height. Improving them as regards the restriction of fire spread is often desirable and occasionally undertaken. The installation of sprinkler equipment may in some cases be cheaper than structural changes and yet provide the same amount of improvement in life safety.

Educating the Public Thru the School

The education of the public in matters of fire prevention is the most important step that can be taken toward limiting the loss of life and property by fire. Members of the National Fire Protection Association have worked hard and faithfully to reach the public thru printed word and personal contact, and their efforts are beginning to bear fruit. Fire prevention bureaus are being formed, better building codes are being adopted, inspection service is improving, chambers of commerce in various cities are showing an interest in fire protection, and various other organizations and clubs have helped the cause along.

If within the next year the teaching of fire prevention were incorporated in the courses of all schools and colleges in the United States, it is safe to predict that the effect upon the fire waste would be very great. Matters of fire prevention and fire protection are so closely connected with matters of chemistry, physics, sanitary engineering and other established branches of study that emphasis can be laid upon them in connection with these studies to excellent advantage. In all cases the study of text-books should be supplemented by the reading of current fire protection literature and by the study of recent fires. All pupils should at some stage in the course be taken to a public fire department station, and the operation of the apparatus, fire alarm system and the organization of the department should be thoroly explained to them.

Children should also be required to make thoro inspections of the school buildings, their homes, and possibly churches, libraries and other public buildings.

A part of the duty of a school fire brigade is to make regular periodic inspections of fire hazards, fire-fighting equipment and egress facilities, and to test apparatus and appliances. Reports of these inspections should be submitted to the principal upon a regular inspection blank. For educational purposes this kind of daily inspection is a great advantage, as it serves not only to maintain good conditions, but by rotating the inspection work brings to bear the point of view of many persons and gives these persons very definite education.

ACKNOWLEDGMENT.—From the Quarterly of the National Fire Prevention Association.

A Community Drive Against Delinquency

By O. F. Lewis

General Secretary, Prison Association of New York

TO reduce juvenile delinquency thru community effort and team work is a state-wide movement in New York now being developed by the Prison Association of New York, 135 East 15th Street. "Reduce juvenile delinquency especially by attractive equivalents" is the gist of the movement. Out of the great community lessons of coöperation and team-work learned from the war, communities may learn to focus community interest and activity upon a definite, appealing and vital social problem—the moral and social welfare of the boys and girls of the community.

The community should face and treat its own local problems of delinquency by local coöperative effort of local organizations and individuals. To this end the Prison Association furnishes to communities what it calls "One Hundred Questions," a tabloid-survey questionnaire, to guide the study and effort of whatever body takes the matter up. These hundred questions are reprinted herewith.

The *modus operandi* suggested by the Prison Association is: (1) organization of a small representative committee of citizens, perhaps twenty-five; (2) preliminary discussion and study of the outstanding conditions of the community making for delinquency, and of the results; (3) detailed study of conditions as needing most immediate treatment; (4) organization of the community's resources to rectify these conditions.

The method suggested embraces a hitherto little-developed line of action. In place of furthering intensively one particular feature of child life, or singling out one particular district of the community, the Prison Association advocates "the seeing of the community's problems in delinquency as a whole, seeing them in their relation to each other, then planning such undertakings to reduce juvenile delinquency as are most necessary, always by the coöperation and utilization of already existing agencies, and when necessary by the bringing in of new

agencies that may function locally."

A specially valuable feature of the questionnaire is the frequent citation of national, state or municipal organizations that can be called upon to give advice, send literature, and be otherwise helpful. The Prison Association of New York invites correspondence upon this plan and will give details. Women's clubs, civic associations, mothers' clubs, associated charities, or other bodies may initiate the movement socially.

ONE HUNDRED QUESTIONS

Population

1. What is the "community" to be studied—the village, town, city, or district?
(Russell Sage Foundation, Dept. of Surveys, 130 East 22nd Street, New York City.)

2. Population. Increasing or decreasing? Where? Why?

3. Chief racial or nationality divisions of the "community." Any significance for delinquency problem? Any centers of moral infection?
(Federal Children's Bureau, Washington, D. C., for child welfare in general.)

Local Administration

4. Form of local administration—mayor, supervisors, selectmen, common council, etc.
(American City Bureau, Tribune Building, New York City.)

5. What administrative responsibilities for delinquency conditions?

6. What conditions can be bettered by official action of public authorities?

- (National Municipal League, 705 North American Building, Philadelphia, Pa.)

7. What clear examples of indifference or neglect by public authorities?

Existing Correctional or Remedial Features—Public

8. What local correctional institutions—detention home, jail, lockup, reformatory, etc.? Conditions of same. Legal purposes. Methods of administration. Betterments feasible.

- (Prison Association of New York, 135 East 15th Street, New York City.)

9. What local courts deal with delinquency?
(Criminal Courts Committee, 105 East 22nd Street, New York City.)

10. Is there a juvenile court? Methods. Judge elected or appointed? Court separate, or a part of adult court?

- (National Probation Association, Charles L. Chute, Albany, N. Y.)

11. Ages of juveniles brought before it. Where are children detained pending court action? Methods in detention home.

- (For detention homes, Department of Child Welfare, Russell Sage Foundation, 130 East 22nd Street, New York City.)

12. Probation system in juvenile court? What probation officers—salaried, volunteer? Methods of supervision and treatment of children on probation.

- (State Probation Commission, Albany, N. Y.)

13. Undue publicity to proceedings of juvenile court in press?

14. Physical and mental examinations of children by court? Who conducts them? Results.

- (National Committee for Mental Hygiene, 50 Union Square, New York City.)

15. What do court records show as to causes of juvenile delinquency, and methods of treatment?

16. Humane society or society for prevention of cruelty to children? Relationship to court; to delinquency in community.

(New York Society for Prevention of Cruelty to Children, 297 4th Avenue, New York City.)

17. What can be done to make parents more responsible for the morals and conduct of their children, thru court or public opinion?

18. What necessary changes in court procedure in treatment of juveniles necessary or desirable?

Truancy

19. How much truancy? How many truant officers? Training of officers.

(Public Education Association, 8 West 40th Street,* New York City.)

20. Causes of truancy—in school methods; non-school conditions.

(State Department of Education, Department of Attendance, Albany, N. Y.)

21. What are schools doing to check truancy?

22. What are schools doing to attract and hold children's interest and enthusiasm?

23. What do statistics show as to causes of truancy, possible remedies?

24. Truant school or parental schools? What other dispositions of truants? Do schools reach families of truants?

25. What action with neglectful parents?

26. Relation of schools to juvenile court or other courts. Cooperation?

Correctional or Remedial Measures—Private

27. Organizations for helping delinquents—Big Brothers, Big Sisters, volunteer probation officers, local committees.

(Big Brother Movement, 200 Fifth Avenue, New York City; Catholic Big Brothers' League, 1 Madison Avenue, New York City; Big Sisters, 200 Fifth Avenue, New York City; State Probation Commission, Albany, N. Y.)

28. Individual work being done along these lines?

29. Existing charitable societies concerned with delinquents—Associated Charities, St. Vincent de Paul, Salvation Army, Volunteers of America, etc.

(American Association for Organizing Charity, 130 East 22nd Street, New York City; Metropolitan Council, St. Vincent de Paul, 375 Lafayette Street, New York City; National Headquarters, Salvation Army, 120 West 14th Street, New York City; Volunteers of America, 34 West 28th Street, New York City.)

30. Methods. Extensiveness of operations.

31. Other bodies concerned with delinquency—churches, clubs, Rotary Club, chambers of commerce, settlements.

(International Rotary Clubs, Chicago, Ill.; for settlements in New York City, Association of Neighborhood Workers, 184 Eldridge Street, New York City; for Chambers of Commerce, American City Bureau, Tribune Building, New York City; New York Federation of Churches, 200 5th Avenue, New York City.)

32. Overlapping, lack of coordination, inadequate treatment, lack of financial means, etc.?

33. Treatment of delinquents, public and private, after returning on parole from institutions—relief, employment, guidance?

(Prison Association of New York, 135 East 15th Street, New York City.)

Child Labor and Jobs

34. Below what age are children forbidden to work in factories, mercantile establishments, etc.?

(National Consumers' League, 289 4th Avenue, New York City.)

35. What are the laws relating to child labor?

(National Child Labor Committee, 105 East 22nd Street, New York City.)

36. Principal causes of child labor in community?

37. How much delinquency can be traced to child labor? In what ways?

38. How much idleness, vagrancy, street loafing, can be traced to absence of jobs and steady work?

39. Provisions for helping juveniles to find employment, to hold and keep jobs?

40. Facilities for vocational guidance and trade instruction. Correlated with other agencies working with delinquents?

(State Department of Education, Division of Industrial Education, Albany, N. Y.; National Society for Vocational Education, 140 West 42nd Street, New York City.)

Homes

41. What housing problems in the community?

(National Housing Association, 105 East 22nd Street, New York City.)

42. Relation of congestion, broken homes, absence of parents at work, to juvenile delinquency.

43. Public and private agencies in the community dealing with housing, family destitution, poverty leading to delinquency. Methods. Results.

(American Association for Organizing Charity, 130 East 22nd Street, New York City.)

Commercial Entertainments and Amusements

(Playground and Recreation Association of America, 1 Madison Avenue, New York City.)

44. Fornis of commercial amusements in community.

45. Locations. Prices of Admission. Nature of entertainments.

46. Movies: effects upon children; nature of pictures; lighting; admission of children with older persons; frequency of visitations. How are admission fees obtained by children?

(National Juvenile Motion Picture League, 381 4th Avenue, New York City.)

47. Movies: relationship of community to National Board of Review of Motion Pictures; local inspection or censorship.

(National Board of Review of Motion Pictures, 70 5th Avenue, New York City.)

48. Movies: special entertainments; Better Film Movement; Educational films.

49. Dance halls: How many? Management and supervision. Girls excluded below what age? Dance halls connected with saloons? Other demoralizing features.

50. Pool-rooms, skating-rinks, and bowling-alleys—what effects upon juveniles?

51. Picnic parks, railroad parks, steamboat excursions, etc.

52. What agencies in the community are combating noxious commercial entertainments and amusements? How successfully?

Public Recreation

(Playground and Recreation Association of America, 1 Madison Avenue, New York City; Community Service, 1 Madison Avenue, New York City; Russell Sage Foundation, Department of Recreation, 130 East 22nd Street, New York City.)

53. Parks: How many? Large? Small? Location relative to congested areas.

54. Use of parks—for sports and other forms of recreation, such as swimming, wading, refreshments, boating, riding, picnics, band concerts, sings, public meetings, public baths, shower baths.

55. Policing and lighting: night conditions; reputation of parks.

56. Parks still needed? Size; location.

57. Administration of parks: Is there a Parks and Playground Association? Relation of park department to citizen organizations.

58. Playgrounds: How many? How supervised?

59. Playgrounds: Open when? Equipment; location. Near congested districts? How much used?

60. Maintained under what auspices? Nature of games?

61. Other public provision for games and sports—tennis, golf, athletics, swimming, boating, skating, etc.

(Public Schools Athletic League, 157 East 67th Street, New York City, for New York City.)

62. How administered and supervised?

63. Other forms of public recreation—public musical festivals, concerts, holiday celebrations, parades, community singing, etc.

(National Federation of Musical Clubs; Community Service, Department of Community Singing, 1 Madison Avenue, New York City.)

64. What public recreational features, carried on during war time, should be continued into peace-time?

65. School buildings used for play-places, recreational centers, community centers? How many? How often? Supervision; programs; attendance.

(Social Unit Organization, Cincinnati, Ohio; People's Institute, 70 5th Avenue, New York City.)

66. School gardens: supervision.

(School Garden Association, 124 West 30th Street, New York City.)

67. Recreational features stimulated by board of education in schools.

(Public Education Association, 8 West 40th Street, New York City.)

68. Are there community pageants, community opera, or other community expressions growing out of public effort?

69. Is there a municipal recreational system? Under what department? A superintendent of recreation? What annual budget? How expended?

(American City Bureau, Tribune Building, New York City.)

70. Is your community one in which it is felt that the children have the right kind of good time while growing up?

(National Child Welfare Association, 70 5th Avenue, New York City.)

71. How much interest is there among your citizens in providing recreational facilities for young people?

72. Is there a playground association or other community group with similar purposes?

73. What recreational activities and facilities are offered or fostered thru the following groups in your community: churches; clubs; fraternal orders; chamber of commerce or like organizations; Y. M. C. A.; Y. W. C. A.; Y. M. H. A.; Knights of Columbus; settlements; other civic associations and private agencies?

(International Commission, Y. M. C. A., 347 Madison Avenue, New York City; National Board, Y. W. C. A., 600 Lexington Avenue, N. Y. C.; National Federation of Settlements, 20 Union Park, Boston, Mass.; Council Y. M. H. A., 114 5th Avenue, New York City; Knights of Columbus.)

74. How many persons, especially the young, are these efforts reaching?

75. Do the following agencies operate in your community: Boy Scouts; Girl Scouts; Campfire Girls; Boys' Clubs; Girls' Clubs; Mothers' Clubs; Parent-Teachers' Associations? What others? How efficiently?

(Boy Scouts, 200 5th Avenue, New York City; Girl Scouts, 31 East 17th Street, New York City; Campfire Girls, 31 East 17th Street, New York City; National Congress of Mothers, 1314 Massachusetts Avenue, Washington, D. C.; Boys' Club Federation, 110 West 40th Street, New York City.)

76. Are there enough of them? Where ought other similar groups or clubs to be?

77. What lessons were learned from private effort in your community, during the war, to supply recreational interests for soldiers and sailors?

(War Camp Community Service, 1 Madison Avenue, New York City.)

Self Improvement

(State Department of Education, Division of Educational Extension, Albany, N. Y.)

78. To what extent are the following activities present in your community: public libraries; branch libraries; traveling libraries; settlement clubs; church clubs; trade schools; vocational guidance; debating clubs; other self-improvement activities for juveniles?

79. How many children took out books during the last fiscal year at the public library? What kind of books?

(American Library Association; New York State Library Association, Albany, N. Y.)

80. Does the library encourage its use by publicity and interpretation of its equipment and purpose?

Does it have books for the immigrant population? Does it go to the community, or does the community have to come to it?

81. How are the library and the schools correlated?

82. Is there a children's department and a children's librarian?

83. Are there branch libraries in schools, industries, and factories?

84. Is there an auditorium in the library? Is it used, how often and for what purposes?

85. To what extent do the schools foster self-improvement? Inside school hours? Outside school hours?

86. What forces in the community foster artistic self-development in juveniles? Art expression, craftsmanship, dramatics, singing, instrumental music, etc.

87. What encouragement is there to children and young people to develop clubs and profitable activities in place of the "gang" and the "gang spirit"?

Mental Health

88. What facilities has your community for recognizing feeble-mindedness or mental defectiveness in the juvenile court; the schools; the community?

(National Committee for Mental Hygiene, 50 Union Square, New York City.)

89. Are mental tests applied? By whom?

(State Board of Charities, Albany, N. Y.; State Charities Aid Association, 105 East 22nd Street, New York City.)

90. What efforts to secure custodial care for the more pronounced cases of feeble-mindedness?

91. What examples of the dangers of the presence of feeble-minded women in the community?

Social Hygiene

92. What activities in the community to promote social and sex hygiene?

(American Social Hygiene Association, 105 West 40th Street, New York City.)

93. Is sex hygiene instruction given to groups? To individuals? Where? By whom? With what results?

94. What treatment of venereal diseases by public institutions or organizations is available? Hospitals, clinics, charitable institutions, correctional institutions?

95. What are the laws relating to the prevention and treatment of venereal diseases?

Community Betterment

96. What examples of community effort in recent years to eradicate bad social conditions—Cleaning up of "red-light district"; vice commission; efforts of civic association, etc.?

97. What organizations can be expected to initiate or carry on organized movements to better bad social conditions now?

(Community Service, 1 Madison Avenue, New York City.)

98. What does this study of local delinquency conditions show are the chief disintegrating conditions in the community?

99. What does the study show to be the principal betterments to be striven for now?

100. What program can be now planned for the reduction of juvenile delinquency in the community for the coming twelve months? For the next two years? For the next five years?

(Prison Association of New York, 135 East 15th Street, New York City.)

Americanization in the Schools

The day has come when every teacher in this nation must stand up and be counted. Are you 100 per cent American? Are you inculcating the highest principles and the loftiest ideals of American citizenship in your pupils? Do you realize the full responsibility that rests on your shoulders for training future American citizens? Are you able to give this message of Americanism in such terms that the children understand and carry the words home to parents who perhaps are not so thoroly imbued with the American ideals?

If so, then you are the kind of teacher that we need in our schools to-day. If you are slighting this responsibility, there is no room for you in the schools of our nation, for you are a liability rather than an asset.

The new year 1920 must signalize the new service of education. This new service of education must include training for every individual activity and every community life expression.

JOSEPHINE CORLISS PRESTON,
President, National Education Association.

Local Option on Sunday Motion Pictures in New York State Reveals a Divided Public Opinion

TO some people Sunday movies and baseball are an irritant; others look upon them as the poor man's only opportunity for recreation. Public opinion has been so divided on the question in New York State that the Legislature on April 19, 1919, by two separate acts amended the penal law by granting to cities, towns and villages local option on both these questions.

The first act granted to cities the power to legalize by local ordinance the playing and witnessing of baseball games after 2 o'clock on Sunday afternoon whether admissions are charged or not.

The second act, with which we are particularly concerned, does two things: in cities where motion pictures are now exhibited on Sundays they may continue to be exhibited after two o'clock unless prohibited by ordinance; in cities where they are not now exhibited they shall not be exhibited on Sundays unless specifically permitted by local ordinance, and then only after two o'clock in the afternoon.

In response to an inquiry from THE AMERICAN CITY to the city clerks of communities in New York State, the following replies were received:

Albany.—"An ordinance here prohibits Sunday movies."—David E. Pugh, City Clerk.

Albion.—"No action has ever been taken by Board of Trustees. . . . One of the two picture houses has kept open on Sundays for the last two years."—E. A. Mahoney, Village Clerk.

Auburn.—"We have an ordinance permitting motion pictures on Sunday between the hours of 2 o'clock in the afternoon and 10:30 in the evening."—C. A. Dayton, City Clerk.

Batavia.—"No ordinance regulating motion picture houses, but all show houses are open on Sunday for motion pictures."—Ira J. Carmichael, City Clerk.

Binghamton.—"An ordinance has been passed permitting Sunday movies."—Jess C. Höver, City Clerk.

Buffalo.—"At the time the law was enacted the city had already permitted the display of motion pictures, and that act met the requirements of the law."—Daniel J. Sweeney.

Canandaigua.—"No requests have been made for Sunday motion picture permits; consequently no action has been taken by the Council."—W. E. Martin, City Clerk.

Cohoes.—"We have an ordinance permitting the exhibition of motion pictures on Sundays between the hours of 2 o'clock in the afternoon and 10:45 in the evening."—Eugene M. Hebert, Clerk.

Corning.—"We have an ordinance permitting Sunday motion pictures."—Harry A. Rood, City Clerk.

Dunkirk.—"Motion picture shows have been operating on Sundays for several years. For this reason it was not thought necessary to adopt an ordinance."—Arthur D. Toomey, City Clerk.

Geneva.—"The Council adopted an ordinance permitting the playing of baseball on Sunday and rejected Sunday moving pictures."—William A. Riley, City Clerk.

Glens Falls.—"No action has been taken in the matter of Sunday movies, altho they are permitted."—Earl E. Hall, City Clerk.

Gloversville.—"Council adopted a resolution prohibiting motion pictures on Sundays."—W. H. Browne, City Clerk.

Haverstraw.—"Ordinance legalizing Sunday movies after 2 P. M. adopted November 25, 1919."—Alex Mendelson, Village Clerk.

Hudson.—"I beg to quote the following ordinance: 'It shall be lawful to exhibit motion pictures after two o'clock in the afternoon on the first day of the week.'"—Luther Van Etten, City Clerk, per F. G.

Ithaca.—"From the ordinance: . . . 'Motion picture entertainments and baseball games are hereby permitted on Sunday afternoon between 2 o'clock and 5:30 o'clock in the afternoon.'"—W. O. Kerr, City Clerk.

Jamestown.—"Mayor called a referendum vote of the people, which showed a decisive majority against closing Sunday picture shows."—Allene M. Jenner, Acting Clerk.

Kingston.—"We have an ordinance prohibiting Sunday movies."—Fred H. Doremus, City Clerk.

Little Falls.—"The proposition to allow motion pictures on Sunday was defeated at the last election in this city."—Charles Byron, City Clerk.

Lockport.—"Moving picture theaters have operated on Sunday for some years past. No ordinance has yet been considered, altho it has been discussed by individual members of the Council."—Jesse Greenman, City Clerk.

Malone.—"Our village has not been requested to act upon granting of Sunday motion pictures since the law referred it to local option. They have permitted Sunday baseball."—L. W. Haskell, Clerk.

Medina.—"No action has ever been taken on Sunday movies. We have two motion picture theaters here that are both running Sunday evenings."—Charles H. Arnold, Clerk.

Mount Vernon.—"Mount Vernon has legalized Sunday motion pictures by an ordinance. Motion pictures not shown before this ordinance was passed."—Lucy A. Aikens, Chief Clerk.

Newark.—"Village Board turned down the proposition of Sunday movies."—F. J. Baltzel, City Clerk.

New Rochelle.—"No application has been made for Sunday motion picture permits, and at the present time there is no ordinance permitting them."—Charles Kammermeyer, City Clerk.

New York City.—"We have an ordinance permitting Sunday baseball, but none on motion pictures, altho the theaters are permitted to keep open on Sundays."—Ordinance Clerk.

Niagara Falls.—"This city allowed motion pictures to run on Sunday prior to the law of 1919. It was unnecessary for the Council to take action."—George Rickert, City Clerk.

Oneonta.—"Display of motion pictures on Sunday not permitted in this city."—S. H. Close, City Clerk.

Norwich.—"From the ordinance: 'Exhibition of motion pictures on Sundays shall be permitted between 2 P. M. and 11 P. M.' 'Playing of amateur baseball on Sunday is hereby permitted between the hours of 1 P. M. and 6 P. M.'"—J. C. Robinson, City Clerk.

Ossining.—"No action has been taken, as the two motion picture houses prefer to close on Sunday."—Robert T. Dennis, Village Clerk.

Oswego.—"An ordinance has been passed permitting the display of motion pictures on Sundays."—John M. Hurley, City Clerk.

Port Chester.—"Motion pictures have been displayed here on Sundays for a number of years. No action was thought necessary under the new law."—Fredrick G. Schmidt, Village Clerk.

Port Jervis.—"No ordinance has been passed and no application has been made by local theaters to operate on Sunday."—John F. Cleary, City Clerk.

Poughkeepsie.—"Common Council allows baseball on Sunday."—J. A. Tolland, City Clerk.

Salamanca.—"Motion pictures and baseball allowed on Sunday."—George H. Elliott, City Clerk.

Seneca Falls.—"After a short discussion the Board voted against the proposition of motion pictures on Sunday."—Charles W. Combs, Village Clerk.

Tarrytown.—"No action has been taken. The matter has not been brought up."—J. Wyckoff Cole, City Clerk.

Tonawanda.—"The city of Tonawanda has taken no action. Picture shows have been allowed to operate here for quite a number of years. The Council has adopted an ordinance permitting Sunday baseball."—Moss W. Simson, City Clerk.

Utica.—"The Common Council by a vote of 10 to 3 legalized Sunday motion pictures in Utica."—George D. Shay, City Clerk.

Watertown.—"The Common Council adopted an ordinance permitting the showing of motion pictures on Sundays."—E. W. Clark, City Clerk.

In the 40 different cities mentioned above, 13 permitted Sunday motion pictures before the new law went into effect, and consequently needed no local ordinance; 13 have local ordinances permitting them now; 5 are not showing pictures on Sunday and have had no requests for an ordinance; 8 have rejected them; 8 report in addition that they have legalized Sunday baseball.

Have Sunday Movies Without Ordinance

Albion
Batavia
Buffalo
Dunkirk
Glens Falls
Lockport
Malone
Medina
New York City
Niagara Falls
Port Chester
Salamanca
Tonawanda

Have Legalized Them Under New Law

Auburn
Binghamton
Cohoes
Corning
Haverstraw
Hudson
Ithaca
Jamestown
Mount Vernon
Norwich
Oswego
Utica
Watertown

Have Had No Requests for Sunday Movies

Canandaigua
New Rochelle
Ossining
Port Jervis
Tarrytown

Rejected Ordinance to Legalize Them

Albany
Geneva
Gloversville
Kingston
Little Falls
Newark
Oneonta
Seneca Falls

Have Legalized Sunday Baseball

Geneva
Ithaca
Malone
New York City
Norwich
Poughkeepsie
Salamanca
Tonawanda

Features of the New Comfort Station in Allentown, Pa.

Modern Equipment and Revenue-Producing Concessions Will Pay Maintenance Costs

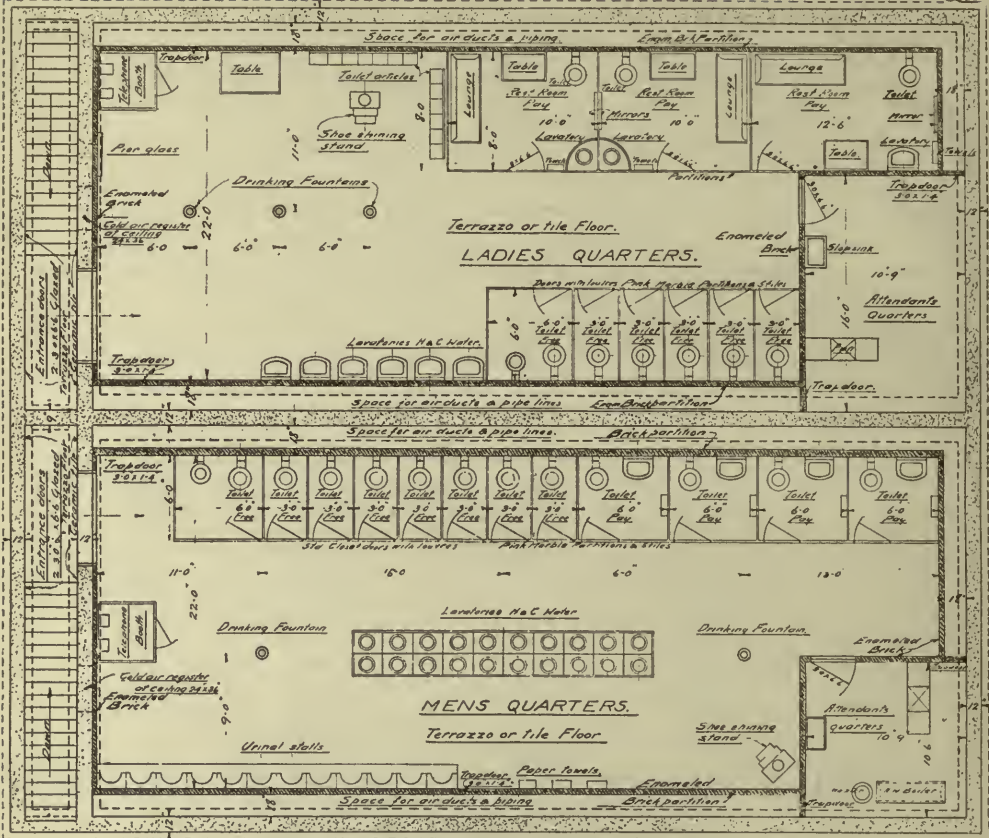
By Harry F. Bascom, C. E.
City Engineer, Allentown, Pa.

IN line with the general belief thruout the country that new comfort stations are needed in every city, Allentown has already begun the construction of a large station in Centre Square at the junction of Hamilton Street and North 7th Street. The station is below the surface of the square and is reached by two staircases from the sidewalk.

The general interior will be finished with white enameled brick for the side walls, Terrazzo floors and suspended metal ceiling. One of the features of the plumbing equipment is that all the piping is being installed in an open space 30 inches wide back of the walls, thus facilitating any necessary repairs at a later date and greatly reducing the first cost of construction. The

ventilation of the station will be cared for by a fan of sufficient capacity to change the air in the room every five or six minutes. The air will be removed thru registers in the ceiling and floor. In cold weather the heat will be provided by the local central steam heating company, and the station will be lighted by the Holophane system.

One of the features will be the revenue-producing concessions and devices, which it is expected will very nearly pay the cost of maintenance and operation. There will be three coin locks on toilets and rest rooms in the ladies' quarters equipped for 10-cent coins, and three for toilets only equipped for 5-cent coins, and in the men's quarters there will be three coin locks on toilets and



FLOOR PLAN OF NEW ALLENTOWN, PA., COMFORT STATION

lavatory equipped for 10-cent coins, and four for toilets only equipped for 5-cent coins, and one for 25-cent coins. For this last-named toilet, lavatory and shower-bath service will be furnished. It is expected that additional revenues will be forthcoming from shoe-shining concessions, telephone booths, and the sale of toilet articles.

The general arrangement of the ladies' quarters is such as to be productive of comfort and provide a thoroly sanitary station. Three drinking fountains of the bubbler type are provided, and each rest room is equipped with lavatory, toilet, table and lounge. There are adequate attendants' quarters, in which will be stored all articles for maintaining the cleanliness of the sta-

tion and for additional supplies. Hot and cold water are provided at each of the lavatories. A heater and a hot water boiler located in the attendant's room of the men's section will furnish the hot water. A telephone booth is provided in each division of the station.

The station is centrally located at the busiest section of Allentown, and the arrangements already made indicate that it will have every convenience for the benefit of patrons. The station will be open from 6 A. M. to 11 P. M., and necessary regulations will be made governing the care and service for sanitary and safe conditions. No advertising matter can be displayed in the stations.

What the State Health Departments Do for the Municipalities

A Complete Summary Based on Latest Reports From Each State

Part I: Alabama—New Jersey

THE coöperation and assistance of the state health departments in this country is becoming an ever-increasing feature in public health activities. Municipalities look to the state for a great deal of assistance, and thru acts passed by the state legislatures considerable authority is given to the state health departments in

Alabama

Representatives of the State Board give personal assistance to local health officials in case of epidemics. In an intensive campaign to assist the towns in the state to become "epidemic proof" a large number of cities have received the services of an expert sanitary officer and a sanitary engineer sent free of charge by the State Board to (1) to make sanitation surveys, (2) deliver public addresses, (3) inspect school children, and (4) conduct house-to-house campaigns. Wherever such services have been rendered, the town authorities have been expected to enact and enforce sanitary ordinances and to bear the local expenses incident to the campaign. The Sanitary Engineer examines all water-supplies periodically and visits towns and cities upon request, to give advice on the location and improvement of water-supplies and sewerage systems. The Field Director of Sanitation also makes visits to cities and towns upon request to look into health conditions.

S. W. WELCH, M. D.,
State Health Officer.

Arizona

The State Board of Health, composed of the Governor, Attorney and Superintendent of Public Health, has direct supervision over all county and city health departments, and is ready at all times to stand behind actions of any of the local health boards. Vital statistics are handled in the Superintendent's office. All communicable diseases are reportable to the central office, and quarantines are governed from it. A separate department for the investigation of foods is closely affiliated with the Board of Health.

Arkansas

Wherever possible, the local health authorities plan and execute all necessary health measures in the municipalities. The state law, however, empowers the State Board of Health to take the initiative when it is deemed necessary. The State Board encourages the appointment of public health nurses, assists in holding baby health contests, and helps in organizing and conducting clean-up campaigns. The Board endeavors to enforce isolation measures and to prevent epidemics. The State Sanitary Engineer makes examination of all public water-supplies in the state, and makes recommendations and approves all plans and specifications for the installation of sewer and water systems or the extension of them. The hotels, rooming-houses and restaurants of the state are inspected and placed under license. When owners or proprietors fail to comply with stipulated regulations in regard to sanitary conditions, screening, ventilation, sewage disposal, etc., the establishments are closed.

The Bureau of Venereal Disease Control is assisting the municipalities in every way possible in a more rigid enforcement of laws looking to the isolation, treatment and rehabilitation of prostitutes, and general venereal disease control measures. With the assistance of the Red Cross and the Arkansas Public Health Association and volunteer agencies, every effort

controlling municipal activities, particularly in times of emergency, such as epidemics and great disasters. Thru the courtesy of the officials of the various state health departments, THE AMERICAN CITY has been able to summarize the work which each department is prepared to do for the municipalities within the borders of its state.

is being made to establish and increase public health nursing in many of the cities and towns of the state. A beginning has been made in the registration of births and deaths thruout the state. Malaria control, intensive community measures and such other educational measures as limited funds will permit are undertaken by the Board. A strenuous effort is being made by the State Board of Health to correlate and coördinate the work of all volunteer public health agencies operating in the state. While every such agency is welcomed to the state, the time has come when there will be considerable conflict and duplication unless the volunteer agencies are supervised by one centralized authority.

C. W. GARRISON, M. D.,
State Health Officer.

California

Under the Bureau of Administration of the State Board of Health are three state district health officers, who are continually investigating conditions within their districts, and advising, assisting, and at times directing, the local health officials. These experts are available for emergency assistance. For the more important investigations and control work the Bureau of Communicable Diseases, with its epidemiologists and bacteriologists, is constantly available. The Bureau of Tuberculosis pays a subsidy to county hospitals, inspects them, and assists local authorities in their tuberculosis problems. The Bureau of Social Hygiene coöperates with the municipalities in their efforts to handle the venereal disease problem.

The Bureau of Sanitary Engineering makes laboratory and field examinations of existing or proposed domestic water-works, sewage works, swimming pools, polluted streams and shellfish beds; orders or advises on new sanitary engineering projects or improvements; approves plans and issues permits, and supervises the licensing of all journeymen and master plumbers. This Bureau has mandatory powers over the safety and quality of water-supplies and sewage disposal thru its ability to order abatement or improvements, violation of its orders being punishable by injunction, fine or imprisonment. The Bureau of Foods and Drugs makes inspections and renders valuable assistance in keeping up standards and preventing the sale of mislabeled, adulterated or decomposed foodstuffs. The new Bureau of Child Hygiene conducts weighing and measuring tests and stimulates the establishment of baby clinics thruout the state.

WILFRED H. KELLOGG, M. D.,
Executive Health Officer.

Colorado

The State Health Department furnishes free of charge to any town within the state plans and specifications for a modern sewage disposal plant. It makes free analyses of water used by the citizens of the towns, advises what corrections are needed, and furnishes plans for installation. Thru its plumbing inspection branch it controls the installation of plumbing in all public buildings outside of cities of the

first class. Thru its food and drug inspection branch it gives cities advice in dairy and meat inspection, and forwards drafts of ordinances covering these subjects, requires the proper sanitation of bakeries, groceries, meat shops, canning factories, hotels, restaurants, and other public places where food is handled, and enforces the food and drug law in all municipalities within the state.

There is a State Dairy Commissioner, who makes examinations for anybody in the state in regard to dairy products. The Meat and Slaughter Inspector attends to the inspection of all meats and the slaughtering of cattle. The Food and Drug Department attends to inspection of drug stores, sanitation of bakeries, groceries and all places where food products are handled.

R. L. DRINKWATER, M. D.,
Secretary, State Health Department.

Connecticut

The State Department of Health advises and assists local health officials upon request, and may, on its own initiative, assume the powers and duties of local health authorities when occasion demands. The organization of the Department provides for: (1) a Bureau of Vital Statistics, which collects and collaborates morbidity and mortality statistics and furnishes local registrars with necessary supplies; (2) a Bureau of Preventable Diseases, which provides for the services of expert consultants and epidemiologists; (3) a Bureau of Sanitary Engineering, which advises on all sanitary matters, including water-supplies and sewage, and is empowered to approve or disapprove plans for all proposed installations; (4) a Bureau of Laboratories, which gives free service to physicians and health officers, and regularly examines milk, water and sewage for cities and towns; and (5) an Industrial Waste Commission, which cooperates with municipalities and manufacturers in the study of industrial wastes for the purpose of determining economical and efficient methods of recovery or elimination; (6) a Bureau of Child Hygiene and Public Health Nursing, which endeavors to place in every community child hygiene agencies, such as clinics and milk stations, and at the same time to promote public health nursing in all its branches; (7) a Division of Social Hygiene, which provides for the establishment of clinics and free treatment of the poor afflicted with social diseases. This division also carries out a wide publicity program.

JOHN T. BLACK, M. D.,
Commissioner of Health.

Delaware

The State Board of Health is authorized by law to pass whatever rules and regulations are necessary for the protection of the health or life of the citizens of the state. Such rules have the force of law and must be enforced by all local boards of health. Birth, death and marriage records are sent to the office of the State Board of Health monthly, where they are tabulated, indexed and filed. Reports of communicable diseases are sent directly to the State Board of Health as well as to local boards. The Reconstruction Commission is cooperating with all agencies in preventing infant mortality. The State Laboratory is prepared to examine free of charge specimens from suspected cases of communicable disease, including the Wasserman test for syphilis. The Laboratory also examines at frequent intervals samples from the public water and milk supplies of the state. A state bulletin is issued monthly in which all current health news and information is set forth. The State Board of Health desires that local boards of health shall take all necessary steps for the health protection of the public and it offers such boards the full service of the staff of the State Board for consultation, etc. Furthermore, the State Board has for general educational purposes about twenty different circulars and pamphlets. The State Board furnishes necessary curative and immunizing serum and antitoxin for indigent cases of communicable diseases.

L. S. CONNELL, M. D.,
Secretary, State Board of Health.

Florida

The State Board has available for the use of its municipalities: (1) a corps of competent field health officers, who make inspections over their districts monthly, and more frequently if called upon, and, after a careful examination of the conditions, make visits to the city councils to advise them on needed

improvements; (2) a Bureau of Vital Statistics, which is in a position to give valuable information to the cities and towns at all times as to their particular health standing; (3) a Bureau of Engineering, which renders advice pertaining to sewerage, water-supplies, refuse collection and disposal, makes sanitary surveys of cities and towns, and maintains a water and sewage laboratory; and (4) four diagnostic laboratories, at the service of the cities at all times, and so located as to be convenient to every portion of the state. General statutes empower the State Board to make and enforce such rules and regulations as are deemed advisable; (5) a Bureau of Child Welfare is maintained, the object of which is to save unnecessary waste of material and infant life and promote conservation of a healthy child life; (6) the Bureau of Venereal Diseases is charged with the treatment, prevention and control of venereal diseases and works in conjunction with the Public Health Service of the U. S. Government; (7) the Orthopedic Service is charged with the care of the crippled children of Florida; a fund created by an act of the Legislature is available for the care of indigent, ruptured and crippled children of Florida.

WILLIAM J. BUCK, M. D.,
Assistant State Health Officer.

Georgia

The State Board of Health is ready at all times to aid the municipalities in their efforts to better their health conditions. A vital statistics law places the registration of all births and deaths under the charge of this Board. A number of sanitary surveys have been conducted in rural districts for the purpose of reducing infant mortality and improving general health and sanitation. Pasteur virus, diphtheria antitoxin and anti-typhoid vaccine are sent free to indigent cases. General diagnostic analytical work (except the analysis of food and milk) is undertaken at the state laboratories. A special division of the Health Board makes route analyses of public water-supplies, inspects water-works, instructs water-works superintendents and investigates sewage complaints. The State Board frequently conducts educational campaigns and issues health bulletins.

Idaho

The State Department of Public Welfare may at its discretion take the initiative in improving or advising improvements in the health conditions of the municipalities. A model birth registration law has resulted in complete birth records. A thoro insistence upon proper quarantine measures often necessitates visits to cities by the State Health Officer, who, with his assistants, also frequently inspects the sources of public water-supplies and makes recommendations for improvement. Sanitary and food drug inspectors are operating continually.

Illinois

The various divisions of the State Department of Public Health render expert service to cities and villages as follows: The Division of Vital Statistics supervises local registration of births and deaths and furnishes statistical data. The Division of Child Hygiene and Public Health Nursing establishes child welfare and public health nursing service in local communities, and conducts campaigns of education and "Better Baby" contests. The Division of Communicable Diseases determines diagnoses in disputed cases, assists in the enforcement of health laws, rules and ordinances, assumes control in serious epidemics, and furnishes model health ordinances and health codes. The Division of Tuberculosis assists in creating local machinery to combat and prevent tuberculosis, and passes upon and furnishes plans for municipal sanatoria.

The Division of Sanitary Engineering conducts sanitary surveys and investigations, supervises installations of and improvements in sewage and water plants, advises concerning waste disposal, investigates sources of typhoid and other diseases, and makes laboratory analyses of water, sewage and wastes. The Division of Diagnostic Laboratories makes laboratory examinations for local health officers in suspected cases of typhoid fever, tuberculosis, diphtheria, malaria and venereal diseases; and furnishes diphtheria antitoxin, typhoid and smallpox vaccine, nitrate of silver solution, etc., thru agencies established in each county and in all large centers of population.

The Division of Surveys and Rural Hygiene makes sanitary and health surveys and conducts educational campaigns in rural sections. The Division of Public

Health Instruction conducts general state-wide educational campaigns; loans to health departments, and to other organizations exhibits, motion pictures, posters and other educational material; supplies pamphlets and circulars and conducts press service thru the newspapers thruout the state. District state health officers appointed by the State Board establish a direct connection between the central department and the local districts, serving as the official advisers of local health officials.

GEORGE T. PALMER, M. D.,
Assistant Director, State Department of Public Health.

Indiana

The State Board has direct control over municipal officers; altho it has not the power to appoint local officers, it has the power to discharge them for certain reasons laid down in the law. The city councils have power to pass ordinances which do not conflict with the laws and rules of the State Board. The Board helps cities whenever requested, and not infrequently takes hold of municipal problems where such problems are neglected by the local authorities. It has in constant service pure food and drug laboratories, water and sewage laboratories, also bacteriological and pathological and Pasteur laboratories. It invites correspondence thru the papers in regard to complaints of insanitary conditions, and is glad to answer requests for information concerning public hygiene and public health. It distributes circulars, arranges for public health meetings, and conducts frequent educational campaigns.

The Board has a Bureau of Venereal Diseases which is operated in cooperation with the U. S. Health Service, and has also a Division of Child Hygiene and a Division of Tuberculosis. There is also a Division of School Sanitation, which has supervision of all sanitary features in all public and parochial schools, which establishes and enforces standards of heating, lighting, ventilation, etc. For all new school buildings constructed in the state plans and specifications must be submitted to the State Board of Health for approval.

W. F. KING, M. D.,
Assistant Secretary, State Health Department.

Iowa

All municipalities are provided by the State Board of Health with rules and regulations covering disease prevention and with suggestions for remedying insanitary conditions. Advice is given to municipal health officials by the Board whenever requested. An epidemiologist is furnished by the Board to examine into disease epidemics. His services are free to the municipalities, but they are required to pay his traveling and hotel expenses. A sanitary engineer devotes his whole time to the work of advising municipalities in the establishing of proper water-works systems, sewage disposal plants and garbage plants. The municipalities are expected to hire competent engineers to draw plans and specifications for the various services required, but these plans must be submitted to the sanitary engineer for approval. The laboratories established for the State Board at the Iowa State University are utilized by the cities and towns for the examination of water and other substances. The law requires that these cities and towns shall pay to the University a small fee sufficient to cover the cost of examination. From time to time a committee from the Iowa League of Municipalities is called into conference with the Iowa State Board of Health to discuss ways and means whereby the municipalities may be benefited.

GUILFORD H. SUMNER, M. D.,
Secretary-Executive Officer, State Board of Health.

Kansas

The State Board of Health endeavors to aid the municipalities in every way possible, particularly in the matter of public water-supplies and sewage disposal. The state water and sewage law gives the State Department absolute authority over water-works and sewerage systems. Permission must be secured from the Board before public water-supplies can be installed or a sewerage system built. The water and sewage laboratories make periodical examinations of the public water-supplies and the effluent of the sewage disposal plants, and the state engineers make sanitary surveys and supervising visits to all plants operating in the state. In addition to the water and sewage law, a law passed six years ago requires all table waters,

including bottled and mineral waters and ice, as well as public water-supplies, to be regularly examined by the water and sewage laboratories, and requires sellers of bottled waters and ice to obtain permits, which are issued conditioned upon the purity of the product in question.

S. J. CRUMBINE, M. D.,
Secretary, State Board of Health.

Kentucky

The Kentucky State Board has general supervision of the health of the citizens of the state, and is empowered by law to make and enforce any rules and regulations which they deem necessary. The Bureau of Vital Statistics keeps records of births and deaths and of causes of sickness and mortality, and is in the registration area for both births and deaths. The Bureau of Epidemiology and Bacteriology aids in the early diagnosis, location, prevention and control of epidemics and communicable diseases. The Experiment Station of the University of Kentucky examines in its chemical and bacteriological laboratories samples of food, drugs, drinking water, ice and sewage, and submitted specimens of sputum, etc., to determine the presence of disease. The field of the Bureau of Sanitation is broad, covering the practical utilization of health knowledge in preventing the spread of disease, the study and control of unsanitary conditions, the protection of water-supplies and the regulation of sewers and waste disposal. The remainder of the work of the State Board is handled by the following eight bureaus: Child Welfare, Tuberculosis, Venereal Diseases, Public Nursing, Conservation of Vision, Pure Food and Drugs, Hotels and Restaurants and Housing.

J. N. McCORMACK, M. D.,
Secretary, State Board of Health.

Louisiana

On request of its municipalities, or of its own initiative, the State Board of Health makes surveys and inspections, selecting cities and towns which are in greatest need of the work. The vital-statistics law places the registration of births and deaths in charge of the State Board. The Board appoints a local registrar for each district designated by law, issues the necessary instructions, forms and blanks, and collects and collaborates the statistics. In times of epidemic the Board may take charge in case the local authorities are not taking proper precautions; and at all times it furnishes free of charge anti-typhoid vaccine and prophylactic ophthalmia neonatorum treatment. Frequent surveys are made of water-supplies, waste disposal and breeding places of mosquitoes. When surveys are in progress, records and notices of scores are sent to property owners and others involved, and duplicate copies of all such notices are sent, with recommendations, to the municipal health authorities. Plans for proposed water and sewerage systems must be passed upon by the State Board. Frequent inspections of all food-supply places, including dairies, of barber shops and other establishments offering services to the public, also the medical inspection of school children, are undertaken by the State Department.

During 1919 the work of the Bureau of Venereal Diseases was greatly extended. Special services are offered all cities and towns. Many of these have made requests for presentation of health films relating to this subject and for lectures. These requests have been promptly met. Thousands of educational leaflets have been distributed. The work is done for white and colored. In three cities clinics for treatment of venereal diseases have been established.

OSCAR DOWLING, M. D.,
President, State Board of Health.

Maine

The local boards of health are supplied by the State Department with an abundance of printed instructions relating to the public health laws, the rules and regulations of the State Department, and general methods of bettering the health of the people. The state is divided into three sanitary districts, in which district health officers are at work making sanitary surveys and aiding local boards of health in improving the health conditions in their municipalities. The Division of Communicable Diseases covers the usual field of work done by such departments. The state laboratory aids in the diagnosis of communicable diseases and supplies local boards of health with diphtheria anti-

toxin, smallpox vaccine and other biologic products at reasonable rates. Venereal diseases are reported to the State Department, which supplies salvarsan for the cure of syphilitic patients. Besides much laboratory work done in the examination of samples from private water-supplies, systematic examinations of all municipal supplies are made quarterly each year. Local workers for the improvement of health conditions, whether official or volunteer, are sought out by the State Department and helped with supplies of leaflets, pamphlets and books, sets of lantern slides and lectures, and by the furnishing of lecturers.

LEVERETT D. BRISTOL, M. D.,
State Commissioner of Health.

Massachusetts

The State Department has coordinate powers with the local board in every city and town. The work of the Department is carried on under the direction of the Commissioner of Health by divisions as follows: The Division of Communicable Diseases advises and aids cities and towns in the prevention and control of disease, and maintains a diagnostic bacteriological laboratory. The Division of Sanitary Engineering has oversight of the purity of water-supplies and inland waters and sewage outlets. The Division of Water and Sewage Laboratories maintains an experimental laboratory for making studies of filtration and the disposal of industrial wastes. It also makes routine examinations of water-supplies of the state. The Division of Biologic Laboratories manufactures various biological products, such as antitoxin and vaccine, and maintains a Wasserman laboratory.

The Division of Food and Drugs enforces the laws relating to the adulteration and cold storage of food and some of the laws relating to slaughtering, and makes analyses of liquors and poisons, drugs and chemicals submitted by any police authority. This division maintains a force of field inspectors as well as a laboratory force. The Division of Hygiene has charge of the publications of the Department and conducts a lecture bureau, loans lantern slides and moving-picture films, maintains a child welfare exhibit and conducts child welfare campaigns. Thruout the state the State Department is represented by the eight state district health officers, whose services are available to any community on request. The district health officers supervise the work of all city and town departments and boards of health in their district. One of their particularly important duties is that of securing better coöperation between extra-governmental agencies interested in public health and the official public health agencies.

EUGENE R. KELLY, M. D.,
State Commissioner of Health.

Maryland

The State Board of Health coöperates with local departments of health whenever its assistance is requested and also whenever, in its judgment, assistance is necessary. It has control of the registration of vital statistics, and can remove inefficient local registrars. Local health authorities are required to transmit to the State Board of Health all notifications of communicable diseases. The State Board assists local Boards in handling or preventing epidemics, and furnishes prophylactic supplies for all registered cases of tuberculosis. It is held responsible for the construction, operation and alteration of water and sewage works everywhere in the state, all plans and specifications for new works requiring its approval.

In the control of foods and drugs the State Department does inspections at large in the state, and prosecuting attorneys are required to handle all cases at law brought by the Department. The State Board acts as intermediary between local boards within and without the state in such matters as the transportation of the sick and of the dead and the transmission of information concerning current morbidity. Eight Deputy State Health Officers are assigned to residence in each of eight Sanitary Districts, and these exercise the powers and duties of the State Board of Health, under the direction of the State Health Officer. The State Board of Health coöperates regularly with the U. S. Public Health Service in the control of the venereal diseases and in the study of current morbidity, and occasionally in school hygiene, or rural hygiene. It acts generally in coöperation with the U. S. Department of Agriculture in matters of food control.

JOHN S. FULTON, M. D.,
State Health Officer.

Michigan

The Michigan Department of Health is delegated with full power to supervise the interests of the health of the citizens of the state. A special study of vital statistics is carried on and an endeavor made to use the collected records intelligently and profitably. The State Department makes sanitary investigations and inquiries respecting the causes of diseases and epidemics, and requires first and final reports of every case of communicable disease to be filed in its office. Whenever an epidemic occurs the State Department is notified and a medical inspector is authorized to take charge of the situation.

The State Department is given supervisory and visitatorial power and control over all companies engaged in furnishing water to the public for household and drinking purposes, and has authority to enter upon pumping plants, filtering plants, reservoirs, standpipes and other property for the purpose of inspecting them and making and enforcing such rules and regulations as it may deem necessary. A laboratory is maintained by the State Department for the examination of water, milk, blood, sputum and other samples sent to it for bacteriological analysis. Wasserman tests are made free of charge for all patients in the state.

R. M. OLIN, M. D.,
State Health Commissioner.

Minnesota

The control of public health in Minnesota is vested in a Board of nine members appointed by the Governor. The general administration of the Board's affairs is in the hands of the Secretary and Executive Officer. There are also several active divisions which carry on the detail work of the Board, and two others have been provided for by action of the Board, but have at the present no appropriation for active work.

The Division of Records has the custody of the records and properties of the Board, takes charge of purchases and accounts, together with the distribution of antitoxin, silver nitrate and diphtheria prophylactic. This Division also has charge of the Board's printing and the licensing of embalmers and rendering plants. The Division of Vital Statistics is charged with the collection, preservation and interpretation of reports of births and deaths. This includes the handling of birth reports, death reports, still-birth reports, embalmers' reports, local registrars' reports, and the issuance of transcripts of original records of births and deaths.

The Division of Preventable Diseases receives morbidity reports, makes epidemiological investigations, prepares certain vaccines, conducts a Pasteur Institute and poliomyelitis after-care. The functions of the Division of Venereal Diseases may be grouped under the heads—Medical, Educational, Social Service. This includes epidemiology and social service investigations of infected persons, distribution of free drugs, laboratory diagnosis, lectures, pamphlets, exhibits, morbidity reports of venereal disease, and the coöperative operation of clinics in conjunction with agencies in the communities where these clinics are located.

The work of the Division of Sanitation is engineering and laboratory, and includes investigation and control of water-supplies, the examination and approval of plans for certain public buildings, and the control of refuse disposal. Special attention is given to the control of water treatment plants, milk pasteurization plants and sewage treatment plants operating thruout the state. The Division of Nursing was recently organized. It correlates the work of public health nurses thruout the state, does a certain amount of additional work relating to child hygiene, and acts as a bureau for finding and placing public health nurses for local work.

C. E. SMITH, JR., M. D.,
Executive Officer, State Board of Health.

Mississippi

The State Health Department of Mississippi is endeavoring to work out the following programs for municipalities in improving health conditions:

1. To improve uniformly the water supply
2. To obtain in all of the municipalities pure milk supplies from creameries
3. To institute measures which have to do with general sanitation of a municipality
4. To look after the occurrence and control of infectious diseases

5. To have all births and deaths reported in each municipality

6. To have in municipalities of 25,000, or more, organized health departments

7. To make municipalities of less than 25,000 population a part of the county unity, and to create in each of these counties an all-time health department with a competent health official as Director.

W. S. LEATHERS, M. D.,
Executive Officer, State Health Board.

Missouri

Action of the State Board of Health is taken only upon request of municipalities, and any recommendations made are simply advisory. The statutes do not give the State Board any enforceable authority, nor have there ever been appropriated sufficient means to take care of the usual services which state boards of health render to their municipalities, with the single exception of the registration of births. The public health statute in this state, as revised at the last session of the Legislature, will become operative in February, 1920. It places upon the State Board of Health the duty to make and enforce adequate rules and regulations for the prevention and control of communicable diseases throughout the state, except within cities of 75,000 population or over.

GEORGE H. JONES, M. D.,
Secretary, State Board of Health.

Montana

The State Board may take the initiative in any municipality in controlling epidemics and instituting necessary measures for the health of its citizens. All births and deaths must be reported to the State Board. A Child Welfare Division distributes bulletins and carries on educational campaigns. All public health nurses are under the control of the State Board of Health. All public water-supplies and sewerage systems are also under its control. A consulting engineer gives advice to cities and towns upon request and makes regular examinations of all public water-supplies. Plans for proposed water-works and sewerage must have the approval of the State Board.

W. F. COGSWELL, M. D.,
Secretary, State Board of Health.

Nebraska

The State Department of Health sends representatives to the cities of the state to investigate epidemics or to make rough sanitary surveys, explain to the municipal authorities their most urgent needs, and outline the best way of meeting these needs. The State Department does not have the legal control over water-supplies and sewage disposal that many state health departments enjoy, but offers help and advice thru its Bureau of Public Health Engineering to any municipalities desiring assistance. A law recently passed requires all municipalities to submit plans and specifications for all construction work on water-works or sewerage plants to the State Department for its approval.

I. H. DILLON, M. D.,
Chief of Bureau of Health.

Nevada

Owing to the failure of the Legislature to make appropriations, the State Department of Health has no field force, no bacteriologist, epidemiologist or sanitary engineer, and is therefore unable to assist the municipalities as it desires.

New Hampshire

The State Board has large executive authority in the matter of epidemics, pollution of water-supplies, the enforcement of the food and drug laws, and in certain other matters pertaining to public health. The State Board is also the Department of Vital Statistics.

to which is made a monthly return of all births, marriages and deaths from every town and city in the state. The State Laboratory of Hygiene, under the control of the State Board, has two departments—one for bacteriological, and one for analytical examinations. The bacteriological department is available to every physician in the state for assistance in the diagnosis of suspected cases of disease. The analytical department is devoted chiefly to the examination, at intervals, of all public water-supplies of the state and of such private supplies as are suspected of being contaminated, and of foods and drugs.

Special attention is given by the State Board to the sanitation of summer resorts. An inspection service has been established to make investigations into the condition of slaughter-houses, meat markets, dairies, bakeries, groceries, etc., and also of the water-supplies and drainage of summer resorts. The State Board constitutes also a Board of Commissioners of Lunacy, to which all applications for aid to indigent insane persons are made, and to which are returned the reports of commitments, discharges and deaths of insane persons at the New Hampshire State Hospital. Work along educational lines is carried on by the State Department of Health thru the distribution of circulars, bulletins and correspondence, and thru personal efforts of the individual members of the Board.

CHARLES DUNCAN, M. D.,
Secretary, State Board of Health.

New Jersey

The state law empowers the State Department of Health to take the initiative in advising and helping municipalities in many matters of public health and sanitation. The law requires the local registrars to collect and transmit certificates of births to the State Department, which constantly advises the local registrars concerning their work. Efforts are made by the State Department to reduce infant mortality by the use of educational exhibits and lectures, the distribution of literature, establishment of Infant Welfare Stations throughout the state, and supervision over midwives and boarding homes for babies. During epidemics experts are furnished to local boards of health to investigate conditions and institute preventive measures. Daily reports from local boards give the State Department early information of cases, and when an unusual number occur, local health officials are requested to inform the State Board concerning the preventive measures which are being taken.

The State Board makes sanitary inspections and analyses of all new sources of public water-supplies. Samples of all public supplies are analyzed every three months, chemical and biological tests of water-treatment plants are made quarterly, and inspections of all water-supplies are made once every two years, or whenever complaints are received or analyses show samples to be of unsatisfactory quality. All plans for water-treatment plants and distribution systems and for sewerage plants must be approved by the State Department. Sewage treatment plants are inspected at quarterly intervals, at which times tests are made for clarification, putrescibility and bacterial reduction. Inspections are also made at other times upon request or complaint, and construction of treatment works is ordered wherever necessary. The State Board of Health is authorized by law to appoint a time and a place for an annual conference for its members and delegates from the various local boards for the consideration of questions relating to the prevention of disease and the promotion of public health. A Bureau of Venereal Disease Control has recently been created by the Department, and venereal disease clinics are being established throughout the state. An extensive campaign of education is carried on.

J. C. PRICE, M. D.,
Director, State Department of Health.

(This interesting summary will be concluded in the February issue of THE AMERICAN CITY.)

Health officers should establish cordial relations with every agency in the community working for the public good—especially the newspapers. The best-informed people are always with the health officer in spirit. It must therefore be his care to let them know what he is trying to do, that they may be given an opportunity to aid in the good work.

Another Canadian Province to Engage in Housing

New Brunswick Adopts Housing Act

By M. B. Dixon

Clerk of the Executive Council

TAKING advantage of the offer of the Federal Government of Canada, the Province of New Brunswick recently passed an act complying with the government prerequisites for a loan. Under this act the Lieutenant-Governor-in-Council was authorized to borrow from the Dominion a sum not exceeding \$1,250,000 for the development of housing within the province.*

In order to promote the erection of dwelling houses of modern character to prevent overcrowding, to contribute to the general health by suitable town planning and housing schemes, and to put within the reach of all persons, particularly returning soldiers, the opportunity of acquiring their own homes at actual cost, the provincial officials are authorized by the act to lend money from the Housing Fund to the Farm Settlement Board, to municipalities or to companies. The Lieutenant-Governor-in-Council is authorized to provide for the compulsory taking of freehold or leasehold property for the development of any town planning or housing scheme, for fixing the compensation to be paid to the owners, and for doing other things necessary for carrying out the terms of the Federal Loan.

Any local authority desiring to participate may, upon the adoption of a resolution signifying its intent to abide by the terms and conditions of the act, borrow from the province a sum not exceeding the proportion allotted to the local authority, make a town planning or housing scheme, or both, acquire the necessary land therefor, and lend the money to any individual or housing company up to within 85 per cent of the cost of the house and land involved. The local authorities may lease houses and lands or may sell them outright. For the purpose of carrying on such operations, the local

authorities may appoint local housing boards.

A special provision authorizes corporations organized under the laws of the province to engage in housing enterprises for their employes and to borrow up to 85 per cent of the cost from the municipality or from the provincial authority. In rural areas the Farm Settlement Board is vested with the powers referred to and elsewhere delegated to local authorities.

Where land is compulsorily purchased by any local authority, and the price cannot be agreed upon, the amount may be settled by arbitration; but nothing shall be allowed for the compulsory taking of the land, and the increased value caused by the improvement of adjacent property under the town planning or housing scheme shall be computed in the settlement.

The Lieutenant-Governor-in-Council has prepared an agreement to be executed by any local authority applying for a loan under the provisions of the said act, providing for repayments on the loan with interest thereon by annual payments, also providing that the local authorities shall only lend, pay out and expend the amount for certain purposes.

A general housing scheme has also been adopted requiring the local authority to submit plans and specifications of the dwellings proposed to be erected to the Lieutenant-Governor-in-Council for approval and limiting the amount that may be loaned on each dwelling according to size, style and material of building. Provision is also made for sanitary conditions and ventilation, and for suitable ground space around or adjacent to each dwelling.

Up to the present date the different municipalities of the province of New Brunswick have applied for and been granted loans amounting to \$965,000. The loans are advanced by instalments, as required by the housing boards.

* A synopsis of the Canadian Government housing plan, prepared by Thomas Adams, appeared in *THE AMERICAN CITY* for April, 1919, on page 323.



GENERAL VIEW OF THE APPLETON, WIS., WATER-WORKS

The Power Plant of the Appleton, Wis., Water-Works

Diesel Engines, Reserve Supply and Laboratory Control Furnish Appleton with Adequate Fire Protection and a High-Quality Water Supply

By James Otradv

Chief Engineer

and

Edward E. Sager

Secretary, Appleton Water Commission

THE city of Appleton assumed control of the water-works on December 1, 1911, when it purchased the old plant from the private owners. Plans were immediately made for a new plant with modern pumping station, filters and other equipment.

The complete plant is located about one-half mile from the center of the city in the valley of the Fox River, which flows thru the city. The pumping station, a brick building 50 by 100 feet, is directly in the rear of the filtration plant. The ground level of the plant is about 50 feet below that of the major portion of the city. The raw water intake, an 18-inch cast-iron pipe, is located in the Fox River above the city. There is also a 20-inch intake in a canal channel nearer to the plant. The water flows by gravity to the filter plant and then to the pump.

The Pumping Station

The power plant consists of two 225-brake-horse-power Diesel engines, which are direct-connected to four 2,000,000-gallon, double-acting, triplex pumps, one at each end of each engine shaft. The en-

gines, which were manufactured by Busch-Sulzer Bros.-Diesel Engine Company, of St. Louis, are located opposite each other with parallel shafts, so that the air compressors can be run from either engine. The pumps are thrown into gear with the gas engine by friction clutches, while two 15-kilowatt generators are driven by link-belt silent chains. The total capacity of one pumping unit, 4,000,000 gallons, is sufficient to provide adequate fire protection for the city.

The engines are run each on alternate weeks, thus affording one reserve unit at all times. They are operated at a speed of 164 revolutions per minute for both fire and domestic use. It is possible to increase the speed to 180 revolutions per minute by means of a special device on the governor. At 180 revolutions per minute the capacity of the pumps is increased about 10 per cent. Ample check is kept on the operation of the pumps, as all water is measured at the station by a Venturi meter.

The Equalizing Reservoir

After the station had been operated about a year by the city, it was decided to build

a distributing reservoir or stand-pipe to take care of the strain on the main caused by direct pumping, as well as to stabilize the pressure against a varying demand, thus making a considerable saving in power, as it was found that two pumps were needed at all times to maintain the pressure needed.

A 500,000-gallon steel tank was built on city property about one-half mile from the plant, on a ground elevation of about 58 feet above that of the plant. The bottom of the tank is 104 feet above the foundations, and the tank itself is 35 feet high and 51 feet in diameter. It is connected to the water system by a 16-inch pipe; an electrically operated hydraulic shut-off valve, controlled from the plant, is located at the base of the stand-pipe, the water being pumped into stand-pipe and mains at the same time, during plant operation, thus equalizing the pressure.

The tank supplies the city for a period of at least 8 hours, during which time the plant is shut down. This is usually at night, from 11 P. M. to 8 or 9 in the morning. By use of the tank, the Diesel engines can be operated at their greatest capacity and efficiency during the day, thus reducing the wear and tear and the consumption of fuel oils.

It is possible to very closely gage the time of shutting down each day by operating one or two pumps to take care of the fluctuating consumption and to gradually fill the stand-pipe so that it will be full by 11 o'clock at night when the plant is scheduled to shut down.

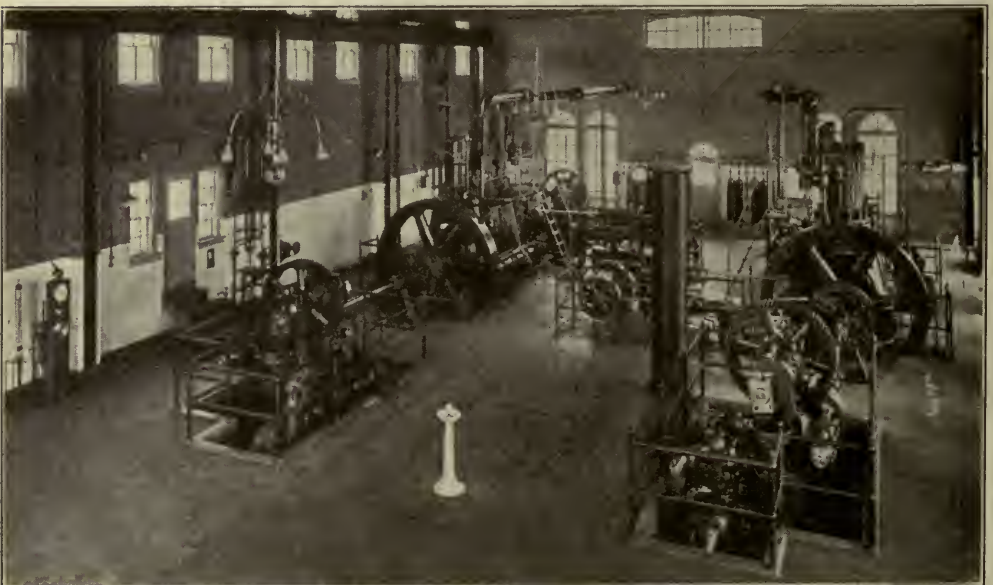
The following table shows the running cost of the Diesel engine for 1918-1919:

Average number gallons water pumped per day	1,640,000
Average number hours operated per day....	13.51
Average number gallons fuel oil used per day	128.08
Average number gallons fuel oil used per million gallons water pumped.....	78.2
Average number pints of cylinder oil used per day	11.18
Average number pints of air compressor oil used per day.....	.65
Average number pints of engine oil used per day	1.28
Average number pints of kerosene oil used per day	2.21

A chief engineer and three assistants, who work on 8-hour shifts, are employed at the plant. The engine repairs to date have been very slight. Very shortly the cylinders of one of the engines are to be sent away for reboring, which should be done about once in five years. This has never been necessary before at this plant and is the first considerable item of maintenance cost.

Domestic and Fire Service

A pressure of from 70 to 86 pounds is maintained at the plant, affording an average domestic pressure of from 48 to 60 pounds, due to the difference between the elevation of the plant and that of the greater portion of the city. The pressure at the heart of the city with the stand-pipe



INTERIOR VIEW OF THE APPLETON POWER AND PUMPING STATION



IN ORDER TO PROPERLY MAINTAIN THE QUALITY OF THE WATER, THIS COMPLETE LABORATORY IS OPERATED AT APPLETON

full is 58 pounds, and when it is emptied the pressure is 43 pounds.

Fire pressure is supplied instantly by closing off the elevated tank by means of the electrically operated hydraulic valve at the base of the stand-pipe, in which case water is pumped into the mains only. The pressure is then raised to about 100 to 110 pounds. The increased pressure is controlled by a Ross regulating valve, so that surplus water is by-passed to the suction line of the pump.

Tests show that the entire operation of closing off the stand-pipe and raising the pressure can be accomplished in about 32 seconds. If the plant is shut down when a fire alarm is received, it can be readily put into full operation and give fire pressure in about three minutes.

An old reservoir of approximately 2½ million gallons capacity, which was repaired and covered some time ago, is located just above the filtration plant and is kept constantly filled with filtered water. This is used for a reserve supply in case any accident should occur at the filter plant,

and for supplying a reserve for an extremely large fire.

Electric current for lighting and auxiliary power for the booster pump and several small motors about the plant is furnished by two 15-kilo-watt, 110-volt, direct-current Allis - Chalmers generators, one of which is connected to each engine by means of a link belt.

The Appleton water-works are operating to the satisfaction of the city, thanks to the foresight of providing a dependable power plant and reserve service.



THE 500,000-GALLON EQUALIZING RESERVOIR AT APPLETON

On the Calendar of Conventions

JANUARY 21-22.—NEW YORK CITY

American Society of Civil Engineers. Annual meeting. Secretary, Charles Warren Hunt, 33 West Thirty-ninth Street, New York City.

JANUARY 29.—BOSTON, MASS.

Massachusetts Association of Boards of Health. Annual meeting. Secretary, W. H. Allen, M. D., Mansfield, Mass.

FEBRUARY 9-13.—LOUISVILLE, KY.

American Road Builders' Association. Annual convention. Secretary, E. L. Powers, 150 Nassau Street, New York City.

FEBRUARY 16-18.—LONDON, ENG.

International Garden Cities and Town Planning Association. Annual meeting. Hon. Secretary, C. B. Purdon, 3 Gray's Inn Place, London, W. C., Eng.

FEBRUARY 19-21.—CHICAGO, ILL.

National Society for Vocational Education. Annual convention. President, David Snedden, Teachers College, New York City.

MARCH 26-27.—BELLINGHAM, WASH.

Washington Association of Commercial Organization Secretaries. Semi-annual convention. Secretary, A. F. Marsh, Chehalis, Wash.

Motor Trucks Are Money-Savers for Municipalities and Counties



A 3 1/2-TON KELLY-SPRINGFIELD TRUCK USED IN ALL KINDS OF ROAD WORK BY THE OFFICIALS IN ESCAMBIA COUNTY, FLA.



THE UTILITY TRUCK OF THE FAYETTEVILLE, N. C., STREET DEPARTMENT

Shortage of men compelled the city of Fayetteville, N. C., to take steps to assist the Street Department in its work. The Cumberland County Commissioners have two trucks, one of which is a Federal, and after a nine-months comparison between the two trucks the 1 1/2-ton Federal with steel end-dumping body, controlled by a hydraulic hoist, was purchased by the Street Department. Its chief duties lie in keeping the street repair men supplied with materials and in hauling dirt from the streets. The body has a capacity of fifty cubic feet.



AN AMERICAN-LA FRANCE CHEMICAL TRUCK USED TO REDUCE THE FIRE LOSS IN THE CITY OF LAKE GEORGE, N. Y.

This car has a 1,000-foot hose body, is equipped with a 40-gallon chemical tank with 200 feet of $\frac{3}{4}$ -inch chemical hose and carries two 3-gallon fire extinguishers, one 20-foot extension ladder and one 20-foot roof ladder, as well as a miscellaneous assortment of necessary auxiliary equipment.



THIS NEW HIGH-PRESSURE FIRE TRUCK WAS BUILT BY THE CITY AND FIRE DEPARTMENT MECHANICS OF OAKLAND, CALIF.

The engine is a 4-cylinder Cadillac. The hose body has a capacity of 1,500 feet of $2\frac{3}{4}$ -inch hose and is equipped with a turret nozzle taken from other apparatus owned by the city.

What Does It Cost to Run a Motor Truck?

All Items Affecting Operating Expense Should Be Considered

THE cost of operating motor trucks is a question in which all municipalities and counties are interested, yet not one in ten can state within reasonable limits what this cost is. There is no uniformity in the charges. Keeping an accurate record of costs is important if the best results are to be obtained, for such a record shows weakness and the way to remedy them.

Costs naturally fall into two classes—fixed and variable. The first classification includes the charges for retiring the investment, for interest on the investment, insurance, garage, licenses, drivers, and similar items. The charge for retiring the investment is usually fixed by determining by experiment a time after which the investment shall be charged off—three, five or more years—and charging each year the corresponding fraction of the cost. Some authorities vary this by charging off a fraction of the previous value. Suppose that one-half has been decided on and the truck cost \$3,000. The first year the amortization charge would be \$1,500; the second year, \$750; the third year, \$375; the fourth, \$187.50. At the end of five years the investment in the truck is only \$88.75.

Interest each year should be charged on the first cost less the amount charged off for amortizing the principal. In the case of amortizing a \$3,000 truck in equal amounts for five years, the interest for the first year would be charged on \$3,000; the second year, on \$2,400; the third year, on \$1,800; the fourth year, on \$1,200; the

fifth year, on \$600. If the truck is used after the fifth year, no charge for investment or interest should be made, as the truck has retired its cost.

The second class of charges is the troublesome one. Charges for oil, gasoline and tires are easy and are dependent largely on mileage. Items of repairs, parts and lost time are the big variables with different trucks and different handling. The greatest value of keeping accurate costs comes thru a careful analysis of these items. The frequency of trips to the repair shop, the time the truck stays there, the charge for the repair—these furnish an index to the quality of the truck and the service the dealer is giving. The most serious source of expense is lost time. The truck is purchased to haul. Lost time means not only the cost of repair but the interruption to business and the expense for another truck to replace the one which is idle in the shop.

Municipal officials should keep accurate records of motor truck costs. They will prove of great help by translating mechanical advantages into terms of dollars and cents, and will provide a convincing argument for the purchase of more motor trucks. The Standard Truck Cost System furnishes the simplest and most complete record on the market. Copies of it may be secured from any motor truck manufacturer or from THE AMERICAN CITY. It covers fully all necessary items and is adapted to any make of truck and any line of work.



ONE TYPE OF SERVICE THE MODERN MOTOR TRUCK IS CALLED UPON TO GIVE
A Kelly-Springfield truck owned by the South Park Commissioners, Chicago, Ill., equipped with snow-plow and trailer for winter service

News and Ideas for Commercial and Civic Organizations

Saving Attleboro's Street Railways

ATTLEBORO, MASS.—The Attleboro Chamber of Commerce is able to report the saving, thru the coöperative efforts of four communities, of the Norton, Taunton and Attleboro Street Railway, a traction company serving Attleboro, Chartley, Norton, Mansfield and Taunton. To satisfy the creditors of a defunct bank, which held a majority of the stock of this street railway company, the Comptroller of Currency had ordered that the railway be either sold or junked. As no bids for the purchase of the property were forthcoming, junking was the only alternative, unless the municipalities affected could be interested in taking official action. A strong committee that had been appointed by the Attleboro Chamber of Commerce assumed the initiative in nearly all the negotiations. A similar committee was appointed by the Taunton Chamber of Commerce, the Mansfield Board of Selectmen, and the Norton Board of Selectmen, these four committees functioning as one.

After giving the problem careful study and consideration, the joint committee reported in favor of the continuation of the Norton, Taunton and Attleboro Street Railway as a private corporation, its stock and bonds to be owned solely and equally by the four municipalities. State legislation, the result of frequent meetings between the joint committee, Senator Silas D. Reed, who represented the legislative district affected, and the State Legislature's Committee on Street Railways, was secured to enable the four interested cities to purchase the line.

An active campaign was then waged in the four cities for the purpose of creating in them favorable sentiment on behalf of the plan, because the proposed purchase required a majority vote in the Attleboro Municipal Council, a two-thirds vote in the Taunton Municipal Council, and a two-

thirds vote in the Norton and Mansfield Town Meetings. The problem was made somewhat difficult in Attleboro by a special committee from the Council recommending favorable action on the purchase of only one section of the railroad instead of entering into the so-called "quadruple alliance" of the four municipalities for the purpose of saving the entire interurban system.

The campaign was successful, the vote being: Attleboro Council, 5-4; Taunton Council, 7-2; Norton Town Meeting, 326-9; and Mansfield Town Meeting, 332-86. The officials of the four municipalities proceeded to work out the details of the continued operation of the road, which is believed to be the first privately operated, but municipally owned, interurban railway system in the United States. The four municipalities made their initial payments on November 15, 1919.

WALTER O. LOCHNER,
Secretary, Attleboro Chamber of Commerce.

A Marketing-Production Movement

TERRE HAUTE, IND.—At a conference held in Terre Haute in November under the auspices of the Greater Terre Haute Club, a movement was organized having for its object increased production and better marketing facilities in the entire Wabash Valley Empire, so-called. The latter consists of twenty counties in Indiana and Illinois in the region of Terre Haute. This conference was the first step toward an active campaign that will be conducted in that section during the month of February, 1920, in which 2,000 meetings will be held for the discussion of ways and means of accomplishing the purposes of the movement. The main features of the program upon which the movement is based follow:

Coöperation of country and city.—Bring about that spirit of coöperation between the business man and the farmer that should exist.

Opening of tested seed markets.—Provide a

means of furnishing to the farmer tested seeds of quality to bring about better production.

Organizing the community spirit.—As a means of providing community centers for the country, bring about those things that make farm life more attractive.

Production; larger acreage yield.—With a more thoro cultivation, encourage a better yield of better grain to the acre, better live stock, better fruits.

Education; increasing facilities.—Give to the children that which is due them, thru better school facilities and better-paid teachers to provide better instruction.

Real Americanism from the heart.—Losing sight of the self and individualism and working together for the whole, realizing that individual prosperity is based upon general welfare.

Agents and assistants in counties.—Endeavoring to assist those counties without county agents or assistants to obtain these valuable adjuncts to their welfare.

Transportation and good roads.—Furnishing the connecting link between the city and the country, with its benefits going to all communities and peoples.

Increasing the marketing facilities.—Bring about a solution of those perplexing problems considered by many as the very foundation of this regional movement.

A square deal to all.—Bring about a better understanding between all groups thru fair dealing, endeavoring to provide a means of stabilizing markets.

Not talk, but real activity.—Forget everything but real activity until a point is reached when there is an opportunity for some real talking.

It is obvious that the farmers will be very much more interested in speeding up production if the marketing facilities, which constitute the very foundation of production, are adequate. It is intended, therefore, to pay special attention to the marketing features of the program.

One of the features of the opening of the movement is the "Get Acquainted" tour that will be made by a few Terre Haute citizens and others into the Wabash Valley Empire. It has been planned to make stops at thirty-seven communities, carrying nothing to sell but the idea of coöperation to bring about the marketing facilities which will eventually result in the required production, not only in quantity but in quality.

The attitude of the farmer himself toward such a movement as this was discussed at the conference, and the stand was taken that he must not be approached in a missionary spirit, but as one business man dealing with another, and that on such a basis he may be expected to coöperate willingly and whole-heartedly.

Terre Haute will be the center of the marketing-production movement, in which the Greater Terre Haute Club is receiving the active support of the Terre Haute Chamber of Commerce and of practically all the commercial organizations in the territory described.

WILLIAM R. SIMMONS,
Director, News Bureau, Greater Terre Haute Club.

Denison's Prospective 160-Acre Park

DENISON, TEX.—The city of Denison is soon to realize its dream of a park in a beautiful tract of 130 acres donated to the city fifteen years ago for park purposes by the late J. T. Munson, one of the pioneer citizens of the community. George E. Kessler, the landscape architect and city planner of St. Louis, Mo., is preparing the plans, and work on the improvements has already been started. The park will be known as Munson Park and, when completed, will be one of the finest rustic recreation grounds in the country.

After a lapse of fourteen years, during which time only slight improvements were made, a few of Denison's leading citizens decided to have the improvements made on a broader scale and along scientific lines. W. B. Munson, a brother of the donor, proposed to the Denison Chamber of Commerce the addition of thirty acres adjoin the park property to be used for a lake, the ground to be his personal gift, and stated that he would match every dollar the city would raise or any other agency would donate for the permanent improvement of the park. The details were quickly arranged, and about \$30,000 soon became available to commence the work. A special park board of three members was appointed to supervise the improvements, Mayor F. G. Coleman representing the city, P. H. Tobin the Chamber of Commerce, and J. R. Handy the Munson interests. The Board immediately secured the services of Mr. Kessler in planning the park.

According to an outline laid down by the architect, the 160 acres of ground will contain a large lake suitable for boating, bathing and fishing; a scenic drive two and one-half miles in length winding thru a heavily wooded and wholly rustic space; a half-mile race-track; baseball grounds; a nine-hole golf course, and tennis courts. During the summer a section of the park will be given over to automobile tourists who

desire camping grounds. The park is one mile from the business section of the city, and the Jefferson Highway, King of Trails, and Oklahoma, Texas and Gulf Highways pass near by. Three entrances and three exits will be so arranged that motorists may enter the park, traverse its winding roadways and still continue in their general direction. All highways thru the park will be one-way drives. The Board hopes to have the improvements completed by next summer.

W. N. KING,
Secretary, Denison Chamber of Commerce.

Building a Summer Resort Among the Sand Dunes

MICHIGAN CITY, IND.—This city is situated at the eastern end of the Indiana dunes territory. For many years these dunes, facing Lake Michigan, were considered worthless and sold for tax titles. A few years ago 120 acres of the level sand ground was converted into what is now

built, and one hundred more will probably be erected during this winter and the coming spring.

One of the most interesting features of the undertaking is the way in which the sand hills are being removed in order to provide suitable home sites. Instead of moving the sand with shovels, an almost prohibitive task on account of the expense, mountains of sand are being carried away by means of centrifugal pumps, which bring water from Lake Michigan to the top of the hills and cause the sand to flow thru sluice channels into the lake. Sand hills 200 and 300 feet high are being leveled so that none will exceed twenty-five feet in height. Literally miles of hills are being moved in this way.

The work on this project has already resulted in the building of several miles of asphalt paving on the boulevard extending along the lake front and into the hills. Water, gas, electricity and telephones have



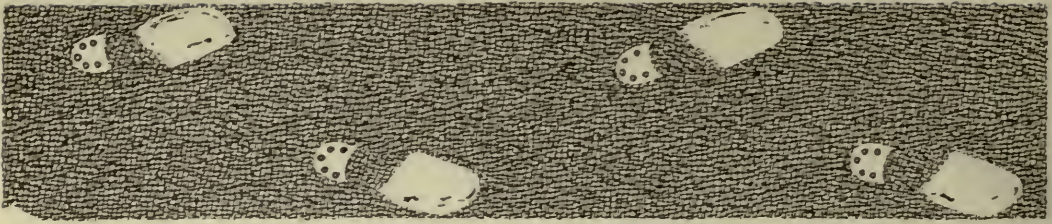
A VIEW OF SOME OF THE SUMMER HOMES AMONG THE SAND DUNES IN MICHIGAN CITY, IND.

Washington Park. Beyond this park are the foot-hills and the larger sand dunes. The possibility of developing this territory into a summer resort occurred to the Michigan City Chamber of Commerce, which launched a movement with that object in view. Interest in the dunes was aroused, the advantage of building summer cottages became apparent, and a few of the more courageous people began to do so. Within the past year over fifty houses have been

been provided for the summer cottages.

A summer hotel is being erected which will be ready for use next June. It is believed by many that Michigan City will become one of the most popular summers resorts on the Great Lakes. This is an activity which might be conducted very readily by other cities and towns similarly located.

W. K. GREENEBAUM,
Secretary-Manager, Michigan City Chamber of Commerce.



Where Do They Go?

Are your policemen free to roam where they choose?

You hire policemen to buy protection against violence of the elements and humanity gone wrong.

If you don't *know* you are getting it—you may be sure you are not.

A city should be managed as strictly as any business institution. There is no more important business than maintaining the peace and security of the community where you dwell and find your livelihood.

To insure it, you must know your police are on the job every minute, night and day.

The **HARDINGE SYSTEM OF POLICE REGISTRATION** tells you beyond question what each and all of your men are doing.

It costs little—it is a giant in efficiency.

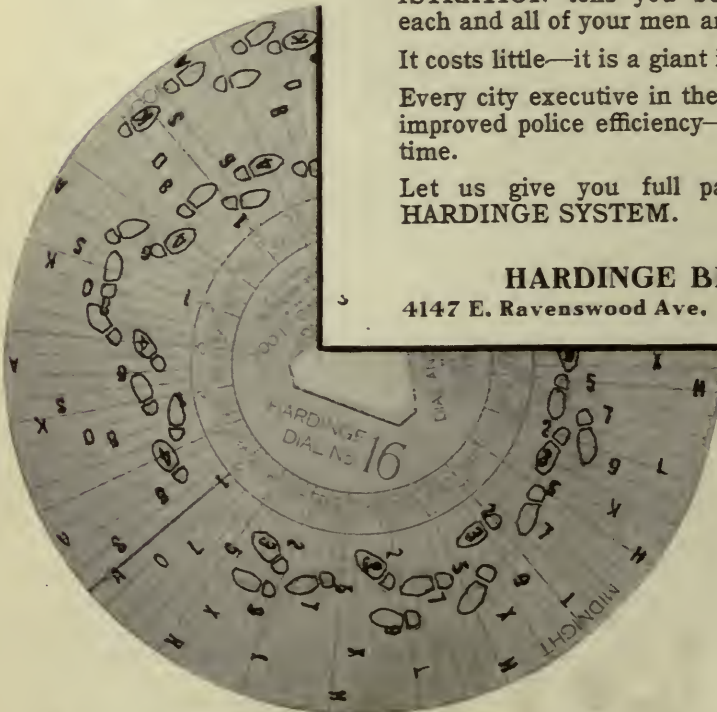
Every city executive in the land is interested in improved police efficiency—especially so at this time.

Let us give you full particulars about the **HARDINGE SYSTEM**.

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Our book, "The Key To Vigilance" is Free. Ask for it—if you are a city official.

Working Plan for Labor and Capital

NEW YORK, N. Y.—At a meeting of the Industrial Committee of the Merchants' Association held a few weeks ago, a statement containing some strong declarations with regard to the relations between labor and capital was presented. Excerpts from the report, which was unanimously approved by the Board of Directors, follow:

Your committee will not attempt to offer a complete solution of the problem of industrial relations, but it is hoped that the report may be of value in stimulating employers to constant study and effort toward promoting in their industrial plants measures based upon justice and conducive to prosperity; and in assisting in arriving at helpful decisions in bringing about harmonious relations with employees.

The change in fundamental industrial relations will be an evolution. With the proper thought and effort on the part of both employers and employees, improvement and advancement will be gradually made and progress will be successful in proportion to the interest and breadth of vision with which the problem is considered. Each advance will show a goal more desirable than that hitherto striven for. Care should be taken that each step is a real advance, not one which will have to be retraced. Employers must take the lead in the effort to apply sound principles to the improvement and advancement of industrial relations; much in the way of leadership is properly expected of them.

This evolution is being retarded in part by three features of our industrial system, which are not compatible with satisfactory industrial relations:

1. *The short-sighted determination too often found on the part of employers and employees selfishly to get maximum results without consideration by either of the interests of the other, or of the public, as the controlling motive in industry.* This selfish determination of employers and employees has hitherto been recognized by society as entirely proper, yet it is fallacious because it is destructive of maximum production.

2. *Lack of understanding and mutual confidence of employers and employees.* Suspicion and lack of a complete understanding of each element in industry of the just aims, aspirations and problems of all other elements make constructive cooperation impossible.

3. *The law of supply and demand as the determining factor in fixing wages and conditions of employment.* Many of the results of this economic law are unfair and prejudicial to the interests of both employers and employees, and are socially undesirable.

In view of the detrimental influence of these features of our industrial system, your committee recommends:

1. *The recognition by both employers and employees that the determination to achieve national prosperity rather than to enforce maxi-*

mum selfish returns should be the controlling motive in industry.

The community as such has a right to insist that industry be carried on in the interest of all citizens rather than for the sole benefit of those engaged directly in it. The permanent welfare of all citizens depends on national prosperity, which is impossible unless there is maximum production at minimum "per unit" cost without impairment either of proper living standards of employees or the ability of the employers to earn a reasonable return on their investment. These requisites of national prosperity cannot be obtained unless employers and employees work together harmoniously with that end in view. Fundamental industrial problems of human relations can be solved upon the accepted basis that without national prosperity the permanent interests of parties to industry cannot be conserved; and that with such prosperity relations between employers and employees can be worked out with justice to both.

In its broadest aspect, employers and employees unquestionably have a common interest, as it is only thru the promotion of the interests of both that the country and the industrial communities in it can enjoy permanent prosperity. The actions and demands of employers and employees become unwarranted when they handicap the industries of the nation in competition with foreign industries.

2. *The establishment of a recognized and permanent method of conference between the employer and his employees.*

Conferences at which all subjects of mutual interest may be presented are essential to the development of understanding and mutual confidence. The mere willingness of an employer to meet employees who have grievances is not sufficient. There should be a definite arrangement—satisfactory to both employers and employees—whereby employees can collectively take up disputes or matters of common interest with employers.

3. *The limitation of the economic law of supply and demand as a basis of labor policy by the utilization of a more human doctrine.*

Like the solution of the entire problem of industrial relations, the development of any definite human doctrine which will modify and limit the economic law of supply and demand, will be a matter of evolution. Nevertheless, your Committee recommends the immediate recognition of the following principles which will themselves modify the application of the law of supply and demand to a large degree, and are essential to the development of the human doctrine.

- a. All wage-earners, skilled and unskilled, in return for a fair day's work, have a right to a living wage sufficient to insure the workers and their families the opportunity to live in health and comfort in accord with the concepts and standards of American life.

- b. Continuity of employment at normal wages should be maintained up to a point where permanent prosperity and stability of the business—rather than immediate profits—

Otterson Auto-Eductor Cleans Catch Basins Saves Time-Money-Labor



The Otterson Auto-Eductors are saving thousands of dollars yearly to the following cities now using them:—

Seattle, Wash., 1 machine
Portland, Ore., 1 machine
San Francisco, Cal., 1 machine
Chicago, Ill., 1 machine
Chicago, Ill., repeat order, 6 machines
Chicago Park Board, 1 machine
Milwaukee, Wis., 2 machines
Milwaukee, Wis., repeat order, 2 machines
Indianapolis, Ind., 1 machine
Indianapolis, Ind., repeat order, 1 machine
Louisville, Ky., 1 machine
Louisville, Ky., repeat order, 1 machine

Akron, Ohio, 1 machine
Albany, N. Y., 1 machine
Brooklyn, N. Y., 1 machine
New Bedford, Mass., 1 machine
Providence, R. I., 1 machine
Providence, R. I., repeat order, 1 machine
Richmond, Va., 1 machine
Bridgeport, Conn., 1 machine
Halifax, N. S., 1 machine

U. S. Army Camps:

Camp Meade
Camp Gordon
Camp Lee
Honolulu, H. I.

Efficient, economical and sanitary in operation. Cleans catch basins in from four to twenty minutes:

**Equipment mounted on any 5-TON
Chassis of suitable standard make.**

THE OTTERSON AUTO-EDUCTOR CO.

817 FAIRBANKS BLDG.

SPRINGFIELD, OHIO.

would be endangered thereby.

Recently much interest has been shown in plans of sharing in profits and participation in management. Many of these plans are undoubtedly valuable if properly developed and given their proper place. They deserve the careful attention of employers. However, your Committee desires to point out that they are merely aids, not remedies. Any plan, the introduction, continuation and final interpretation of which rests solely upon the volition of the employer, will not entirely eliminate dissatisfaction, because it lacks the elements of certainty and permanence and there is no power of enforcement on the part of the employees.

Any plan of profit sharing or participation in management to be of permanent value must receive the unqualified approval of both employer and employees.

The complete report may be procured upon application to the Merchants' Association, which is located in the Woolworth Building.

S. C. MEAD,
Secretary, The Merchants' Association of New York.

Trenton's Civic Forces Coordinated

TRENTON, N. J.—The Chamber of Commerce recently brought about the federation of all the neighborhood and civic associations in Trenton. The new organization, which is called the Trenton Civic League, has already taken up several important improvements along civic lines for the good of the city. The League's headquarters are in the rooms of the Chamber of Commerce, with which it works in close harmony.

The Chamber of Commerce found that while there were nominally about twenty district civic bodies in the city and its immediate suburbs, only four or five of them were alive. Some of the others had been dormant for so long that they were practically dead. The matter of bringing about an amalgamation was presented to the Membership Council of the Chamber of Commerce, which decided to ask a former Governor of New Jersey, Edward C. Stokes, who lives in Trenton, to address the Council's members on the subject at a Council dinner. He accepted the invitation and spoke on "Civic Pride the Key to Civic Progress." Mr. Stokes's remarks were unusually effective, and led to the appointment by the Council of a special Civic Pride Committee to undertake a campaign to build up greater civic pride in Trenton. Soon thereafter a Civic Pride Rally was held, to which each of the civic,

fraternal and similar organizations in the city, including the Inter-Church Federation, the Central Labor Union, the Y. M. C. A., the Y. W. C. A., etc., was invited to send delegates. Former Judge Robert Carey, of Jersey City, made the principal address on this occasion. He spoke on "Individual Responsibility the Basis of Community Development." Each participating organization also had a vice-president on the platform.

The League has already brought about the rejuvenation of two or three of the more-nearly-dead-than-alive associations, and they have now taken up active work. The League's activities are being carried on thru committees, which are studying such subjects as the tax laws, the schools, Americanization, food gardens, shade trees, city cleaning, etc.

The object of the organization, according to its constitution, is "to promote harmony and unity of effort among all these associations of the city of Trenton and surrounding territory whose purpose is to work for a Greater Trenton thru the uplifting of civic pride."

Each association uniting with the League pays an annual fee of \$5, and elects two delegates and two alternates to represent it in the League's deliberations. These delegates, or the alternates acting for them, form the body of the League for the election of officers, the transaction of business and the direction of its work.

HARRY D. CONOVER,
Managing Secretary, Trenton Chamber of Commerce.

Board of Trade Insures Winnipeg Against Housing Loss

WINNIPEG, MAN.—With thousands of soldiers returning and a shortage of about 8,000 houses in the city, the Winnipeg Board of Trade realized early in the year that drastic steps would have to be taken to relieve the housing situation. The Dominion Government set aside a total of \$25,000,000 to be used as loans for housing purposes, and of this sum the city of Winnipeg was allotted \$1,000,000.

The Civics Bureau of the Board of Trade held a great many meetings in an effort to formulate plans for a general housing scheme. The progress of the campaign was hindered somewhat by the labor troubles and the continued high prices of

During the six hours a day when you think your child is safe in school—is this liable to happen?



Never mind how the fire started !

WHILE they were rescuing this little girl from the burning schoolhouse, Dick Sheldon was killed and six other children were badly hurt in the crush.

Thousands of people discussed the fire that night and for days afterward.

"How do you suppose the fire started?" "What could *possibly* have started such a fire?" "How could a fire start in *that* part of the building?"—that's the sort of prattle one heard everywhere.

Did any of them exclaim, "It's a crime for children to be exposed in a building like that?"

No; they thought it a "safe" school because it had fire escapes and wide stairways, and the doors all opened out.

Only the Fire Chief talked *sense*. "Fires break out where and when you least expect them to. There's only one sure way to prevent this sort of a horror, and that's to drown the fire before it can get a start. I wasted my breath two years ago explaining that to the Board, but I guess they'll listen now and put in automatic sprinklers when they build the new school."

If you think chances of fires starting in your

public buildings are small, ask your own Fire Chief. Electric wiring *may* be defective; something *may* go wrong with the heating system; careless boys *may* carry matches; spontaneous combustion *may* occur.

But never mind *how* or *where* or *when* the fire starts. With a Grinnell Automatic Sprinkler System it makes no difference. With the little sprinkler heads always ready to open and drown the fire instantly, great conflagrations cannot occur. Automatic Sprinkler protection is the one sure method of preventing fire tragedies, for *when the fire starts the water starts!*

In daylight and in dark, down in the dim basement or away back in the little-used rooms, in *all* the places where fire is liable to start, the sprinkler is automatically watching. No human watchman could do that.

Read—"Fire Tragedies and Their Remedy"

Write for this free book today. Read and inform yourself fully on this all important matter and pass the book around among your friends. Ask the superintendents of the schools, hospitals and asylums in your community whether your children, relatives and friends are properly safeguarded from this danger. If not, then use your best endeavors to improve conditions before a fire tragedy occurs. Your efforts may help to save lives. Who knows? Write now, before you put aside this magazine. Address Grinnell Company, Inc. 283 West Exchange Street, Providence, R. I.

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materials, but a Housing Commission was eventually formed. This was made up of three representatives of the city government and two of the Board of Trade. The commission was authorized to receive and approve applications for loans to the extent of 85 per cent on homes costing not over \$4,500, the price of the lot being included in the total. The city, as the guarantor, is protected against loss by a special fund that was raised by the Board of Trade among its own members.

The late date at which the organization was completed accounts for the fact that not a great deal was done in actual building in 1919, but a firm foundation has been laid for work in 1920 which will undoubtedly be Winnipeg's greatest year in residential building activity. The Government has agreed to advance additional funds with which to continue the program indefinitely.

J. M. DAVIDSON,
Publicity Secretary, Winnipeg Board of Trade.

Gloversville's Philharmonic Orchestra

GLOVERSVILLE, N. Y.—Thru the instrumentality of the Recreation Committee of the Chamber of Commerce, the citizens of Gloversville have been privileged to listen to some fine orchestral music the last two winter seasons. In the fall of 1918 the discovery was made that an orchestra of fifty-five members, known as the Fulton County Philharmonic Orchestra, had been working in an obscure fashion in the neighborhood of Gloversville for about two years. Its possibilities for greater usefulness were apparent to the Recreation Committee, which effected a reorganization, with an experienced leader and the addition of a number of well-known soloists secured from the Metropolitan Opera Company and elsewhere. A few were also drawn from the four local theaters. A series of Sunday afternoon concerts to be given once a month was then arranged. The 1918-19 concerts were so enjoyable that another series was arranged for the season of 1919-20, which is now in full swing.

Only the more prominent soloists can be classed as trained musicians. The other members of the orchestra are just everyday citizens, employed in business or industry during the day. Musical experts consider this a remarkable Philharmonic for a city

the size of Gloversville. The orchestra has done such fine work in this city that it has received numerous requests for outside engagements.

J. KENNARD JOHNSON,
Manager, Gloversville Chamber of Commerce.

New Bulletins

CLARINDA, IOWA.—*Clarinda*, published quarterly or oftener by the Greater Clarinda Club.

ERIE, PA.—*The Community Builder*, the bulletin of the Erie Board of Commerce.

HENRYETTA, OKLA.—*Henryetta*, published monthly by the Henryetta Chamber of Commerce.

ITHACA, N. Y.—*Pro-Ithaca*, published monthly by the Ithaca Board of Commerce.

WATERVILLE, ME.—*Official Bulletin* of the Waterville-Winslow Chamber of Commerce. Published monthly.

Recently Issued Printed Matter

BEAUMONT, TEX.—"Some of the Accomplishments of the Chamber of Commerce and Young Men's Business League During the Past Year" and the "1920 Objectives of the Beaumont Chamber of Commerce" are contained in the November issue of *Beaumont*, the official organ of the Beaumont Chamber of Commerce.

CHATHAM, ONT.—"Chatham, Ontario, Extends a Most Hearty Welcome" is the title of a folder issued by the Chatham Chamber of Commerce.

EMPORIA, KANS.—The issue of *The Emporian* of November 1, 1919, contains a summary of the activities of the Emporia Chamber of Commerce for the last year.

A leaflet entitled "Does a Membership in the Lyon County Retailers' Association Pay Dividends?" has been issued by the Lyon County Retailers' Association, located at Emporia.

FALL RIVER, MASS.—"Bird's Eye View of the First Year's Activity of the Chamber of Commerce—What We Set Out to Do—What Was Done—Who Did It" is the title of a large folder containing a graphic summary of the accomplishments of the Fall River Chamber of Commerce since October, 1918.

FITCHBURG, MASS.—"After the War" is the title of a folder published by the Fitchburg Chamber of Commerce, containing "Eight Reasons Why Fitchburg Prospers and Grows."

HAGERSTOWN, MD.—A Report of Activities of the Hagerstown Chamber of Commerce for the period from February 1, 1919, to December 1, 1919, is contained in the December issue of *The Hagerstown*, the official bulletin of the Hagerstown Chamber of Commerce.

HAMILTON, OHIO.—A Service Letter was issued by the Hamilton Chamber of Commerce on November 1 which deals in considerable detail with the street situation in Hamilton, and contains suggestions of ways to make it ideal.

JERSEY CITY, N. J.—"A Taxation Questionnaire," issued by the Committee on Taxation of the Jersey City Chamber of Commerce, contains twelve proposals on methods of taxation in regard to which an expression of opinion of the members of the organization was asked.

KANSAS CITY, MO.—The report of an "Investigation of Automatic Telephone Equipment for Kansas City" has been issued by a committee of the Kansas City Chamber of Commerce.

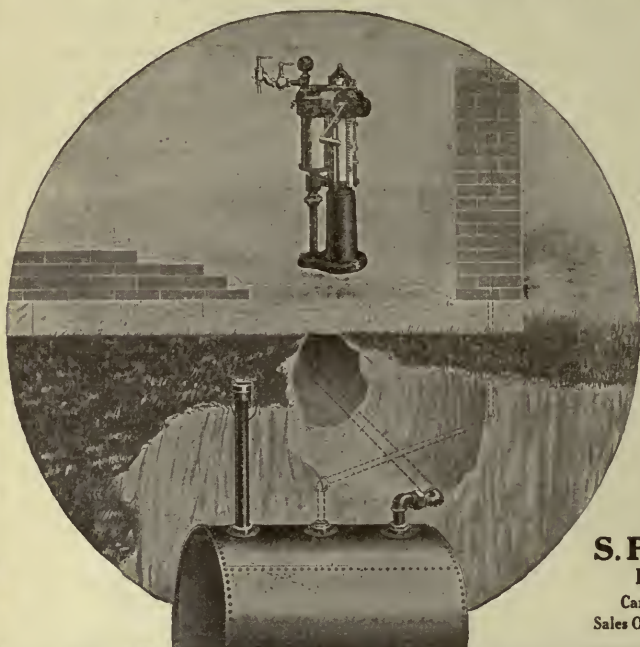
NEW YORK, N. Y.—The December issue of the bulletin of the City Club of New York contains the City Club's annual report.

The Merchants' Association has issued a "Report on Industrial Relations," prepared by its committee on Industrial Relations.

WOONSOCKET, R. I.—The Woonsocket Chamber of Commerce has recently issued two leaflets, one entitled "Past Results and a Program for the Future," and the other, "Facts About Woonsocket, R. I."

"Community Buildings" is the subject of General Report No. 110, just issued by the Research Division of the American City Bureau, Tribune Building, New York. Price \$3.

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The saving in time, labor and oils that the Bowser System effects makes the Bowser System pay for itself.

When you can have Bowser service without cost it will pay you to investigate at once.

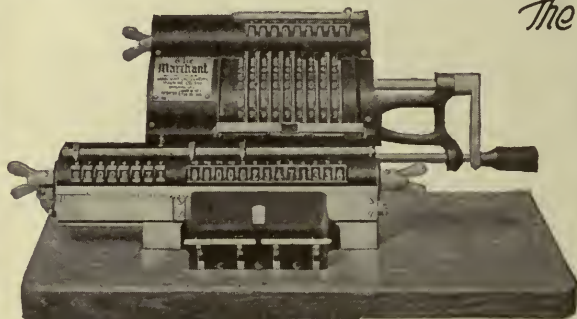
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Changes Among the Secretaries

Hereafter "Changes Among the Secretaries" will be discontinued as a department of THE AMERICAN CITY, and will be found in the new bi-weekly house organ of the American City Bureau. The first issue of this house organ, "Community Leadership Through the Chamber of Commerce," was published January 1, 1920. Officials of local commercial organizations who would like to receive copies of "Community Leadership" without charge are invited to communicate with the American City Bureau, Tribune Building, New York City.

WEBB ADAMS is the new secretary of the Thermopolis, Wyo., Chamber of Commerce.

RALPH S. BAKER has resigned the secretaryship of the Chamber of Commerce at Owego, N. Y., to become secretary of the Watertown, N. Y., Chamber of Commerce.

FRED C. BUTLER, who for the last year has been directing the Americanization activities of the Federal Government, is in Cleveland, Ohio, acting in an advisory capacity to the manufacturers of cloaks and suits in all matters pertaining to the question of labor. In the meantime a bill is progressing in Congress providing for federal aid to the states in the education of the foreign-born, and greatly broadening the Americanization work of the Government.

E. H. CLIFFORD has been chosen secretary of the Wabash, Ind., Chamber of Commerce.

WILLIAM A. CROZIER is the new secretary of the York, Pa., Chamber of Commerce.

GEORGE A. DALY has been elected secretary of the Chamber of Commerce of Yonkers, N. Y.

E. GENTRY, formerly district agent for the United States Department of Agriculture stationed at College Station, Tex., has accepted the secretaryship of the Tyler, Tex., Chamber of Commerce, succeeding Judge Jesse F. Odom, who resigned because of ill health.

CURTIS A. KEEN, of Abilene, Tex., has been appointed secretary of the Chamber of Commerce at Clarendon, Tex.

THEODORE LANDSBERG, manager of the Commercial Club of Erie, Pa., died on December 12 from dilation of the heart.

W. T. LARIMORE has resigned the assistant secretaryship of the Oklahoma City Chamber of Commerce to become secretary of the Chamber of Commerce of Hugo, Okla.

E. B. LEAF has accepted the secretaryship of the Santa Monica-Ocean Park, Calif., Chamber of Commerce.

SAMUEL T. LEE has resigned the secretaryship of the Yankton, S. D., Commercial Association, to become resident manager of the Lee Light & Power Company at Clarinda, Iowa.

GEORGE S. LENHART has resigned as secretary of the Asbury Park, N. J., Chamber of Commerce, to accept a position with the Electric Service Company at Atlantic City, N. J.

GEORGE A. LESTER has resigned the secretaryship of the Forsyth, Mont., Chamber of Commerce, to engage in the practice of law. He is succeeded by Carl Becraft.

RUSSELL MONROE has been elected secretary of the Commercial Club of Columbia, Mo., succeeding W. W. Garth, Jr., who has resigned to go into community welfare work in California.

T. J. PARKER, secretary of the Little Rock, Ark., Lions Club, has been elected secretary of the Jonesboro, Ark., Chamber of Commerce.

ELMORE PETERSON is the secretary of the Chamber of Commerce at Greeley, Colo. The item in the December issue stating that J. R. Cavanaugh had been elected secretary of the Greeley Commercial Club was published thru an error.

J. FRANK QUINN has resigned the secretaryship of the Chamber of Commerce at Warren, Pa., to accept the combined position of City Manager and secretary of the Chamber of Commerce at Petoskey, Mich.

JOHN RICHARDSON has resigned the secretaryship of the Winchester, Va., Chamber of Commerce, to become secretary of the Chamber of Commerce of Herkimer, N. Y.

T. L. RIDDLE has resigned as secretary of the Monroe, La., Chamber of Commerce, to become secretary of the Dunn, N. C., Chamber of Commerce.

RICHARD S. SKINNER, secretary of the Great Falls, Mont., Chamber of Commerce, died on December 12, 1919, after an operation for appendicitis.

FRED J. SMITH has been elected as the new secretary of the Commercial Club of Mena, Ark., succeeding Claude Williford.

JAMES E. STEWART has been elected secretary of the Belle Fourche, S. Dak., Commercial Club.

W. A. SULLIVAN has been elected secretary of the Chamber of Commerce of Richmond, Calif.

G. D. THELEEN has resigned the secretaryship of the Chamber of Commerce at Middletown, N. Y., to become secretary of the Clarksburg, W. Va., Chamber of Commerce.

J. B. WILES has resigned the secretaryship of the Board of Commerce of Parkersburg, W. Va., to become campaign manager of the West Virginia Good Roads Federation.

Estimates of Cost of Proposed Work
Reports on New Improvements
Preparation of Plans
Supervision of Construction

Dams and Reservoirs
Pipe Lines
Filtration Plants
New Water Supply Systems

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In the South, Central West and Canada

Concrete Alley Construction in Covington, Ky.

New Method Permits Use of Templates, and Facilitates Work and Repairs

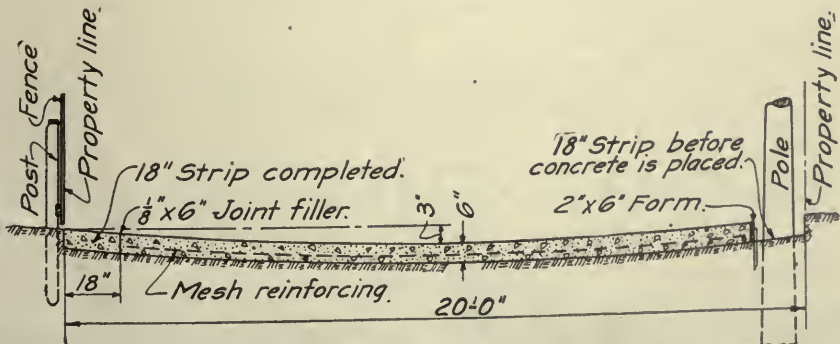
THE construction of concrete alleyways, which is becoming more and more general, is not altogether a simple matter. Very frequently telegraph poles are located within the right of way of the alley, and it is difficult to secure a true concave or convex surface by the use of hand floats or templates. During the last year on some contract work in Covington, Ky., a method was devised by the contractor which proved entirely satisfactory to the city and which has now been adopted as standard. The alleys are 18 feet wide with concave surface having a 3-inch fall from edge to center. A 1:2:3 concrete mixture was used, and the concrete was laid 6 inches thick, reinforced with wire mesh.

In order to provide an unbroken flow line and to increase the facility of work, a form of 2 x 6-inch timber is set up on each side of the alley, 18 inches from the property line. By doing this a space of 15 feet is left between the forms, into which concrete is placed, struck off with a template and finished with a roller and belt, as in regular road construction. The concrete mixer is set up at alley intersections, and buggies are used to carry the mixer to the work. The 18 inches between the edge of the pavement and the building provides sufficient space for the men to handle the strike-board and belt. After the concrete has been allowed to cure for three days, the side forms are removed, a $\frac{1}{8}$ by 6-inch expansion joint is placed against the con-

crete, and the 18-inch space to the property line is filled in. This strip is given a pitch of 1 inch to the foot. By handling the work in this manner a good surface is secured and the construction is materially simplified.

Buildings which front on or extend thru to alleys are often not exactly on the property line. They either encroach on city property or are somewhat back of the property line. The usual practice is to pave the full width between buildings, disregarding the property lines if the buildings are within a few inches one way or the other of the property line. Under these conditions, however, when time arrives to construct a new building, if the alley is a few inches too wide and a builder desires to occupy his entire lot, the concrete of the alley paving must be cut away. The cut may be made very irregular and may destroy the appearance of the alley at that particular point. By the Covington method of construction, the 18-inch strip may be removed if necessary, foundations for new buildings may be constructed and the space remaining between the expansion joint and foundation repaved. In this way the main paving is not disturbed. The longitudinal joints, being within 18 inches of the buildings or fences, receive practically no wear.

This work has been favorably received in Covington, and it is expected that other cities will see its advantages and adopt it for alley paving where concrete is used.



CROSS-SECTION OF CONCRETE ALLEY IN COVINGTON, KY.

FASHIONS CHANGE

but —



CULVERTS SHOULD BE PERMANENT

FASHIONS and styles have changed many, many times since the first Newport Culvert was laid.

Newport Culverts are good for a long period of years. There is no particular pleasure in ripping up your roads every few years to replace defective culverts. Next time buy Newport Culverts and save all this unnecessary work, annoyance and expense.

Made from genuine open hearth iron. Government tests prove them 99.875% pure iron copper alloy. Absolutely rust-resisting. Their lasting qualities are an assured fact. Serviceable for every service. The half-round culvert is ideal for city service. Used by municipalities all over the country.

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KENTUCKY

The City's Legal Rights and Duties

Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Alterable Character of Franchise Rates

A municipality has no power to agree upon unalterable rates or charges to be collected by public service corporations, unless the power be conferred by express legislative grant, or arise as a necessary incident to another power expressly granted. Excepting as a contract of this kind is so authorized by the legislature it is regarded as being against public policy to deny governmental power to regulate rates during the life of a franchise.

This principle is recognized by the Iowa Supreme Court in the recent case of Ottumwa Railway & Light Co. vs. City of Ottumwa, 173 Northwestern Reporter, 270. But an attempt made by the plaintiff company to enjoin interference with maintenance of a higher rate of fare than was fixed as a maximum in its unexpired franchise proved unsuccessful, the court holding that a statute in force in Iowa authorized the making of such an unalterable rate agreement as is found to have been provided in the franchise involved in the case.

The court's decision upholds the defendant city's contention that the contract rates are just as binding on the plaintiff company, even in the face of increased operating costs which may make service at those rates unprofitable, as the same rates would be binding on the city, even in the face of unforeseen circumstances which might make the contract rate yield an excessively high profit.

"We hold that our statutes, taken as a whole," says the Iowa court, "authorize a contract with a street car corporation that rates fixed shall be unchangeable during the life of the contract, if that period is not manifestly too long. The company could have insisted, but did not insist, that there should be provision for meeting changed conditions. It could have refused, but did

not refuse, to enter into a contract unless such provision was made. It follows that its only standing is that of the victim of an improvident contract. For that chancery cannot interfere by injunctive relief."

A similar conclusion is reached by the United States District Court for the Eastern District of Michigan, in the case of Hillsdale Gaslight Co. vs. City of Hillsdale, 258 Federal Reporter, 485. The plaintiff company unsuccessfully sought to secure an increase in rates for gas service above the rates fixed in an unexpired franchise. The court remarks:

"It is elementary that where a municipality, under proper authority from the state, as in the present case, grants a franchise, such as that involved here, to a public utility company, conferring upon the latter, for a definite period and on definite terms and conditions, the right to use public streets and other places for the purpose of supplying the inhabitants of said municipality with a public necessity, and the municipality [company?] accepts such franchise, so that both agree to the terms thereof, the latter becomes a mutually binding contract between the two parties, and cannot be amended or abrogated by either of such parties without the consent of the other."

Qualifying for Municipal Offices

On a municipal officer's being reelected and continuing to discharge the duties of his office after expiration of the first term, his failure to retake the oath of office before entering upon the second term is a mere irregularity which does not affect his tenure. And where a statute or charter provision makes a municipal officer ineligible to another office during his "term of office," he does not become eligible by resigning the first office. (Georgia Supreme Court, Rowe vs. Tuck, 99 Southeastern Reporter, 303.)

Street Improvement Assessment

Under a charter empowering a city to pay the cost of street paving by issuing and selling bonds, or by general taxation, or by



Six Fire Fighting Trucks on Goodyear Cord Pneumatics

WE now have five trucks on Goodyear Cord Pneumatic Truck Tires and have specified these tires on a new truck that is in transit to us. We feel that we have solved the tire problem."—H. J. Wondell, Chief of Fire Dept., Joplin, Mo.

The advantages in equipping fire trucks with Goodyear Cord Pneumatics have been demonstrated conclusively to the chief and to the men of the Joplin, Missouri, fire department.

With the big easy-rolling Goodyears, their trucks can get to fires more quickly: they can get there more surely and safely.

And these advantages—dependability, safety, speed—you can have for your trucks when they are Goodyear Cord-equipped.

For the traction of the broad All-Weather Tread enables trucks using them to go surely, even through deep snows or over soft yards. Their cushioning is such that a higher average speed can be maintained without undue danger of injury either to the truck or to the men.

Authentic information, describing how other fire departments employ Goodyear Cord Pneumatics, and what they save as a result, can be obtained by writing to The Goodyear Tire & Rubber Company, at Akron, Ohio.



GOODYEAR

assessing two-thirds of the cost against abutting property, the city cannot, after having raised funds by a bond issue and paid the cost of paving, levy special assessments against abutting property. Special assessments can only be levied to pay for an improvement, local in character, as distinguished from general, and the proceeds of such assessments cannot be used to augment the general revenue fund, nor to finance a separate and independent improvement project, nor to create a sinking fund to pay bonds issued for various municipal purposes. Power to make special assessments is given municipalities as a means of paying for a particular improvement or benefit to the property assessed; and when the necessary funds are raised otherwise and the improvements made and paid for, there remains no need for a special assessment and no power to make one. (Florida Supreme Court, *City of St. Cloud vs. Carlson*, 82 Southern Reporter, 616.)

Validity of Bread Weight Ordinances

A city ordinance, fixing standard sizes of bread loaves and prescribing loaves of one pound as the minimum weight that may be manufactured and sold by a baker, is not an unreasonable or arbitrary exercise of the police power, and is constitutionally valid. Unless there is a clear and palpable abuse of power, a court will not substitute its judgment for legislative discretion. Local authorities are presumed to be familiar with local conditions and to know the needs of the community. (Ohio Supreme Court, *Allion vs. City of Toledo*, 124 Northeastern Reporter, 237.)

Restricting Noisome and Smelly Industries

A municipality has power by ordinance to divide its territory into business and residential districts, and to prohibit maintenance in the latter of corrals where mules and burros are kept for hire; the keeping of such places in a populous city or town amounting to nuisances. Occupations which by the noise made in their pursuit, or the odors they engender, are offensive to the senses, may be interdicted on the principle that private property should be so used as to cause no injury to the owner's neighbors and be made subservient to the

general interests of the community. The validity of municipal regulations under which such places as corrals are excluded from residential districts is not affected by the fact that a particular owner may conduct his place as carefully as is possible to avoid annoyance to his neighbors. Nor will the courts interfere with exercise of a municipal legislature's discretion as to what regulations are essential to promote the public good, so long as it is not manifest that a particular regulation has no relation to the protection of the public health, safety, comfort, or well-being. (California District Court of Appeal, *Boyd vs. City of Sierra Madre*, 183 Pacific Reporter, 230.)

Aspects of Improvement Contracts

An assignee of a street improvement contractor's right to payment for work done for a city stands in no better light than the contractor himself would have stood had there been no assignment. Therefore, under statutes applying to the city of Indianapolis, an assignee has no standing to sue to compel the Board of Public Works to levy final assessments to pay for street work not finally accepted. And where the assignment was made before any action had been taken toward accepting or rejecting the work, the assignee could not complain of a revocation of an acceptance subsequently made on its being discovered that the work had not been properly constructed. It is only when the rights of innocent third persons have intervened under such circumstances as to make it inequitable to disregard those rights that a city will be precluded from revoking such an acceptance. (Indiana Supreme Court, *State vs. City of Indianapolis*, 123 Northeastern Reporter, 405.)

Georgia Debt Limits

Before a liability for a legitimate current expense can be incurred by a Georgia municipality without violating the state constitution, there must, when the liability is incurred, be a sufficient sum in the treasury which can be lawfully used to pay the liability, or there must be authority and ability to raise a sufficient sum to discharge the debt by taxation during the current year, or, where the liability is for paving a street upon the basis of assessment of abutting property, the money to satisfy the liability



The Streets of a Nation

The highways are but streets from city to city—state to state. When building streets, whether within the city limits, in the suburbs, in the country, or even from state to state, delays are costly.

The call of the nation today is for streets—roads—to carry the merchandise needed everywhere. Modern methods then must be used. This means motor trucks for haulage.

As W. F. Warfield, Vice-President of the Houston Construction Company, Houston, Texas, expressed it, "We are in a new age and the horse driven vehicle is ten years behind the times. The truck is the only solution to meet the demand for quick transportation at a minimum cost. We have no thought other than to increase our fleet by adding more Selden Trucks."

Here is the opinion of an expert in road building construction. "After years of experience with four or five different makes of trucks" the Selden is his choice for future purchases.

Profit by his example. Use Selden Trucks.

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must be provided for by a lawful assessment of property by the municipality to pay the cost of paving. (*Georgia Supreme Court, Gulf Paving Co. vs. City of Atlanta, 99 Southeastern Reporter, 374.*)

An Invalid Water Service Law

In 1913 the California Legislature adopted a law the gist of which made every water-works system with more than 250 service connections an abatable nuisance unless "the water being supplied is the purest and most healthful obtainable or procurable under all the circumstances and conditions." In 1915 the law was amended to eliminate this quoted provision. But litigation was begun prior to the amendment, in which the constitutionality of the law was challenged by the defendant—the case of *Frost vs. City of Los Angeles, 183 Pacific Reporter, 342*. Handing down a decision in the suit, the California Supreme Court holds that the law was unconstitutional prior to its amendment.

The opinion recognizes that the Legislature has broad police powers, subject to constitutional restraint, but holds that the Legislature "cannot, under the guise of the police power, unreasonably interfere with a lawful and useful occupation or business which is not inherently, or because of the manner in which it is carried on, injurious to persons, or property, or to the public health, convenience, comfort, safety, or morals." The principal objection found to the law was that water service might be good and healthful and yet be interfered with on the mere ground that better water could be obtained.

Local Assessments in West Virginia

Under the West Virginia statutes, a city council is without power to provide for street paving, with assessment of two-thirds of the cost against abutting property, unless and until a petition in writing of the persons owning the greater frontage of the lots abutting upon both sides of the street between any two cross streets, or between a cross street and an alley, has been presented to the council requesting that such improvement be made. If the owner of property abutting upon a street knows that the city intends to assess it for part of the cost of paving, and knows facts rendering an assessment against his property improper, he is bound to contest the validity of the

proceedings before the work is done. If he does not do this, he will be deemed to have waived any right he may have had to question the validity of an assessment made against his property because of matters within his knowledge before the construction of the work. An assessment for street paving is not invalid because based upon an apportionment of part of the cost against abutting property according to the front footage of the respective lots, nor because there was no notice of such assessment to the owners. (*West Virginia Supreme Court of Appeals, City of Avis vs. Allen, 99 Southeastern Reporter, 188.*)

Removal of Civil Service Officers

Under the laws of Pennsylvania the mayor of a city of the second class is empowered to remove an officer in the competitive class of the classified civil service for insubordination and profane, contemptuous language used concerning the mayor, without hearing or trial, provided that the removed official be furnished with a written statement of the reasons for his removal, and be given an opportunity to answer in writing. (*Pennsylvania Supreme Court, Thomas vs. Connell, 107 Atlantic Reporter, 691.*)

Restricting Business Locations

The following quoted ordinance provision of the city of Norman, Okla., is a valid exercise of the police power, and not unreasonable, arbitrary or discriminatory:

"It shall be unlawful for any person, partnership or corporation to install, maintain, carry on, operate or run an oil mill, tannery, cotton gin, steam laundry, machine shop, garage, or blacksmith shop within 150 feet of any church building, school house or hospital, within the limits of the city of Norman, Okla., and the carrying on, maintaining or running of any of the above-mentioned businesses within said 150 feet of any church, school building or hospital, be, and the same is hereby declared to be a nuisance and subject to abatement upon suit of any citizen or organization affected thereby." (*Oklahoma Supreme Court, First Presbyterian Church of Norman, Okla., vs. Walcher, 184 Pacific Reporter, 106.*)

Belated Bond Issue

Since it was voted at an election in the city of Montgomery, Ala., in 1908 that the City Council be authorized to issue bonds to establish a hospital, there was nothing to prevent issuance of the bonds in 1919, and the establishment of the hospital, altho



DENBY

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Dependable Truck Equipment

Lost time, greater upkeep cost and shorter useful life make inferior motor trucks more costly than good trucks, the first cost of which is necessarily higher.

Denby equipment has proved perfectly adapted to municipal service because of its dependability, under all conditions of work and roads.

The final costs, considering first cost, depreciation, fuel and upkeep, are surprisingly low.

We will gladly send detailed data on the performance of Denby trucks.

DENBY MOTOR TRUCK COMPANY, Detroit

(65)

the municipal form of government was changed in 1911, the city now being governed by a board of three commissioners. (Alabama Supreme Court, *Stokes vs. City of Montgomery*, 83 Southern Reporter, 663.)

Excessive License Tax

A license tax of \$100 per year imposed by a city on a telegraph company was invalid as being unreasonable and confiscatory, where the company's gross income from intrastate business received at its office in that city, less expense apportionable to that office from entire intrastate expenses, left a net income of less than \$182.62. (Georgia Supreme Court, *Western Union Telegraph Co. vs. City of Fitzgerald*, 100 Southeastern Reporter, 104.)

Oil Filling Station Locations

Under an ordinance forbidding public oil or gasoline filling stations within residential districts without the written consent of at least two-thirds of the owners of property within a specified distance of the location, but exempting from the ordinance stations already in existence, it was not necessary for the owner of an established station to procure such written consent before being entitled to repair, remodel or rebuild the station. And, where the municipal building inspector has refused a permit to rebuild a station on the sole ground that no written consent of near-by property owners has been filed, a mandamus suit will lie to compel issuance of the permit. (Ohio Supreme Court, *State on relation of Moore Oil Co. vs. Dauben, Building Inspector of the City of Columbus*, 124 Northeastern Reporter, 232.)

Garbage Disposal Plants as Nuisances

A city may be held liable in damages for injury to near-by property occasioned by operation of a garbage reducing plant. But a suit to enjoin the carrying out of a municipal project to operate a pig farm near plaintiffs' farms in the disposal of garbage will be dismissed, where plaintiffs seek to prevent hauling of the garbage to the farm, establishment of the piggery, etc., in advance of its being shown that the place will actually be used in such way as to constitute a nuisance. While as a general rule a city

will not be enjoined from doing an authorized act, it must perform such act with regard to the private rights of others, and if it thereby commits a nuisance injurious to others, it may be restrained. (Maryland Court of Appeals, *Mayor and City Council of Baltimore vs. Sackett*, 107 Atlantic Reporter, 557.)

Increasing Street Railway Fares

On reargument of the case of *Quinby vs. Public Service Commission of New York*, Second District (223 New York Reports 244), the Court of Appeals of that state handed down a supplemental opinion October 21, reaffirming the court's holding that no power has been given the Public Service Commission, on application of a street railway company, to increase fares previously fixed by municipalities as a condition to granting a franchise to the road. It will be remembered that the case arose in connection with an attempt of the defendant commission to authorize an increase of street railway fares in Rochester.

"The constitution," says the supplemental opinion of the New York Court of Appeals, "prohibits the Legislature to pass any law to 'authorize the construction or operation of a street railroad' except upon the consent of the local authorities first obtained, and thus to some extent curtails legislative power over the operation of street railroads. We held that it did not fairly appear and it would not be assumed that the Legislature had authorized the Public Service Commission to nullify the conditions attached to such consents by increasing rates without the consent of the local authorities. The court declined to determine the limits of legislative power in this connection * * *."

Interest Accruing on Bonds Before Delivery

Where a town contracted to sell waterworks and electric light bonds of the par value of \$50,000 at 98, and no provision was made in the contract concerning interest accruing between the date of the bonds and any subsequent date on which delivery might be made to the buyer, the town treasurer properly delivered the bonds without insisting upon payment of such accrued interest by the buyer. (Oklahoma Supreme Court, *Town of Spiro vs. Carnall*, 182 Pacific Reporter, 512.)



Another
FEDERAL

This five ton truck is owned by the city of Chicopee, and operated by its Street Department. Under the varied and strenuous demands made upon it, it performs well and is practically never in the repair shop according to the officials of the Street Department of Chicopee, Mass.

FEDERAL

A City's Most Valuable Piece of Machinery

Chicopee, Mass., is an "On the job" city, the officials of which are always on the qui vive to make way for any possible economy in city administration or city construction work, much of which is done by Chicopee itself.

When the street department of Chicopee decided to buy a truck, it did so after thorough investigation had proved to it that a

truck would replace several teams and save considerable money annually for the town.

The officials of the city of Chicopee did not select a truck haphazard. They understood the need of finding a good truck — a steady, sturdy, reliable truck, with the stamina to stand up day after day, under hard usage. Being an On-the-Job city, Chicopee wanted an "On-the-Job" truck.

FEDERAL MOTOR TRUCK COMPANY
34 FEDERAL STREET
DETROIT, MICH.

"Shorten the Miles to Market" "Use Motor Trucks"

Municipal and Civic Publications

See also *Department of News and Ideas for Commercial and Civic Organizations*

City Manager in Dayton.

Four Years of Commission-Manager Government, 1914-1917, and Comparisons with Four Preceding Years Under the Mayor-Council Plan, 1910-1913.

C. E. RIGHTOR, B. A., in collaboration with DON C. SOWERS, Ph. D., and WALTER MATSCHEK, M. A. The Macmillan Company, New York. 1919. xv + 271 pp. Illustrated.

Ever since Dayton adopted the city-manager plan, in August, 1913, students of government have watched developments in that city with more than casual interest, for Dayton is the largest city in which the plan has been thoroughly tested. Mr. Rightor's book, with its detailed and painstaking analysis of results attained under the first four years of the new charter, as compared with a corresponding period under the old régime, is especially welcome, for other comparisons have been all too meager, or else have emanated from city officials who, however fair they may have tried to be, have not been able to avoid the suspicion of bias. In this volume no other works are cited. It is based on the official records of the city, and the significance of the comparisons is left largely to the reader. The objections of the Socialists, who constitute the only serious opponents of the plan, are carefully weighed, and the facts which they have ignored are presented. Mr. Rightor tells how Dayton got good government, discusses the business principles underlying good administration, and compares the methods of determining public policies under the old form and the new. He describes the city manager at work, the methods used to humanize the city government, the protection of life and property, the details of municipal housekeeping, the raising and expenditure of public funds, how the police and firemen were organized for self-help, how municipal baseball teams were organized, and, most important of all, the means employed to arouse and maintain the intelligent interest of the public. Besides its many points of real human interest, this volume contains many charts and tables that should make it a valuable reference work for all persons who are interested in learning the truth about one of the most significant experiments in government that have taken place on a large scale in many years.

Zoning and Street Planning in Portland, Ore.

The annual report for 1919 of the Portland City Planning Commission discusses zoning as the principal work for this year. A pamphlet entitled "Proposed Building Zones for the City of Portland" presents the tentative program agreed upon by the neighborhood property owners' meetings and the City Planning Commission. Another bulletin previously issued by the Commission quotes the regulations which have been adopted regarding the laying out, dedication and acceptance of streets. 32 pp. (Published by the City Planning Commission, 424 City Hall, Portland, Ore.)

Appraisals and Rate Making.

A lecture read before the 15th annual convention of the Illinois Gas Association, Chicago, Ill. Illustrated by 10 curve charts. 1919. 25 pp. (Apply to Sanderson & Porter, 72 West Adams Street, Chicago, Ill.)

Works Councils in the United States.

This report, which includes the results of a comprehensive study of Works Councils in 225 American industrial establishments, should be of much value to personnel workers in industrial plants. October, 1919. 135 pp. (Apply to the National Industrial Conference Board, Boston, Mass.)

The Orifice as a Means of Measuring Flow of Water Thru a Pipe.

A report of the results of tests conducted by the Engineering Experiment Station of the University of Illinois to determine the practicability of employing thin-plate orifices in pipe lines and to ascertain the conditions most favorable for their use as measuring devices. (Write for

Bulletin No. 109 to the Engineering Experiment Station, Urbana, Ill.)

New Ideals in the Planning of Cities, Towns and Villages.

JOHN NOLEN. American City Bureau, New York. 139 pp. Illustrated.

This book was prepared for the Department of Citizenship of the Army Educational Commission, as one of a series to be used by the Overseas Army, A. E. F., "to present fundamental principles, and stimulate intelligent study of the problems of citizenship." The return of the men in the overseas service prevented its specific use as planned, and the American City Bureau has undertaken to help the furtherance of the original purpose of the book. It is simple, direct, and clear in its presentation of practical methods of dealing with the problems of planning and replanning cities and towns. It shows how the physical, business and social conditions of a community must be analyzed and understood before changes can be attempted. It presents the essential facts that must be considered in studying and preparing each of the elements of a city plan—streets and roads, transportation facilities, waterways and water-fronts, open spaces, housing, public buildings, and land subdivision. The problem of financing city planning is dealt with. Means of obtaining professional training in city planning are outlined, and methods of securing reliable publicity for the new ideals of a town are presented. The volume is, in fact, a working handbook that should help to make some of our best dreams come true.

Hygiene and Public Health.

GEORGE M. PRICE, M. D., Director, Joint Board of Sanitary Control. Lea & Febiger, Philadelphia and New York. 1919. viii + 280 pp.

This small volume is an epitome of hygiene and public health, eliminating the subject of personal hygiene, but covering rather completely housing hygiene, school hygiene, industrial hygiene, public water-supply, food supply, milk supply, disposal of waste matter, public nuisances, the prevention of infectious diseases, and federal hygiene.

Is Milk Distribution a Municipal Function?

This 4-page reprint from the *National Municipal Review* of an article by Dorsey W. Hyde, Jr., Municipal Reference Librarian, New York, begins with consideration of the fact that recent surveys made by the New York Department of Health show that "out of 2,200 families, each having at least two children under six years of age, 50 per cent have decreased the amount of milk used since the price began to increase," and cites the experiences of various cities in centralized control of the milk supply and of its distribution. 1919. (Apply to the *National Municipal Review*, North American Building, Philadelphia, Pa.)

A Nation of Home Owners.

A pamphlet advocating a political program which includes among its main features: public ownership of railroads and natural resources now owned by trusts; limitation of great fortunes by inheritance and income taxes; and a new land policy which will forbid holding idle land in reserve for speculation. 1919. 66 pp. (Apply to George L. Record, 15 Exchange Place, Jersey City, N. J.)

Amended Zone Law, St. Louis, Mo.

Ordinance No. 30199 (Zone Law) with amendments and colored maps showing these amendments, issued by the City Plan Commission, St. Louis, Mo. 1919.

Union of British Columbia Municipalities.

The report of the 16th annual convention, held at North Vancouver, B. C., October 7-9, 1919, includes among others the texts of speeches on "Government of a Municipality by a Commissioner," "Government of a Municipality by Council and Manager," and "Relation of the Hospital to the Municipality." 51 pp. (Apply to the Secretary-Treasurer, Mayor Gray, New Westminster, B. C.)



SOCIAL DISEASES
have their birth from
insanitary and im-
proper surroundings
as much as from any
other cause.



Outdoor toilets not only are a disease menace in themselves, but are an embodiment of the mild indecencies, and lack of modesty which all communities are endeavoring to overcome.

Schools provided with outhouses, unclean, and with foul and suggestive pictures are a menace to future generations.

Public officials are responsible for immorality and disease so long as they allow these breeding places to exist.



Solves with one blow all these problems
"No Sewers or Water Necessary"

Eliminates the outdoor toilet nuisance; endorsed by leading sanitarians - - approved by state, county and city officials.



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**ODERLESS, COMFORTABLE,
SANITARY, CONVENIENT.**

Agents and Dealers wanted.

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Dall Steel Products Company
Lansing, Michigan, U. S. A.
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This

The Schools of Delaware.

Two bulletins (Vol. I, Nos. 3 and 4) published by the Service Citizens of Delaware, under the following titles: General Report on School Buildings of Delaware, 1919; Possible Consolidations of Rural Schools in Delaware, based on a Survey of the Public Schools of Delaware (July to September, 1919). The authors are George D. Strayer, N. K. Engelhardt, and F. W. Hart, Professor, Associate Professor, and sometime Associate, respectively, in the Department of Educational Administration, Teachers College, Columbia University. The General Report contains 222 pages, and describes the majority of the schools in Delaware, giving photographs of typical instances. The other report contains 60 pages and gives five-year programs of consolidations proposed for the schools of several counties. (Apply to Service Citizens of Delaware, Public Library Building, Wilmington, Del.)

Legal Recognition of Industrial Women.

A pamphlet including a general survey of the problems involved in woman labor and a discussion of labor legislation of the past and future, covering social insurance, hours of labor, minimum wage, safety, sanitation and health, and collective bargaining, has been issued by the Industrial Committee, War Work Council of the National Board of Young Women's Christian Associations, 600 Lexington Avenue, New York, N. Y. 1919. 91 pp.

Report of the State Engineer, Arizona.

Third biennial report of the State Engineer, including a large number of attractive full-page illustrations. 1916-17 and 1917-18. 243 pp.

A Group of Municipal Reports

Annual Report of the Children's Court, Buffalo, N. Y.

A few of the many interesting statistics contained in the 1918 report of the Children's Court of Buffalo, N. Y., are as follows: Examination of nearly 300 delinquents showed 19 per cent to be morons (high-grade feeble-minded). One-third of all delinquents were found to be 3 or more years retarded in their school work. Of the adults arraigned in the Children's Court, 20.2 per cent could not speak English, the resident in this country from 3 to 41 years. The results of Buffalo's progressive methods of investigating and handling cases are shown in a large number of statistical tables presenting many phases of the work. 82 pp. (Apply to Judge George E. Judge, Children's Court, Buffalo, N. Y.)

Board of Water Commissioners, Johnstown, N. Y.

Filed with the City Clerk January 10, 1919. 57 pp., illustrated. (Apply to Grover E. Yerdon, City Clerk.)

City of Dayton, Ohio, Under the Commissioner-Manager Government.

Fifth annual report. For the year 1918. 31 pp. Published June, 1919, by the City Commission.

Park Commissioners, Fitchburg, Mass.

For the year 1918. Including reports of the park commissioners, forest warden and superintendent of the gypsy and brown-tail moth work. 39 pp. Illustrated. (Apply to D. Sidney Woodworth, M. D., Chairman, Board of Park Commissioners.)

Commissioner of Public Works, St. Paul, Minn.

Year ending December 31, 1918. 145 pp. + attached sheets containing organization chart, maps of St. Paul, showing graded streets, paved streets and parkways, sewers, street sprinkling, bridges and railroad crossings, and numerous tables. (Apply to M. N. Goss, Commissioner.)

Water, Light and Power Department, Austin, Texas.

For the year 1918. 48 pp. (Write to E. C. Bartholomew, Councilman and Superintendent of Parks and Public Property.)

Street and Highway Department, Newport, R. I.

Year 1918. 54 pp. (Apply to John F. Sullivan, Street Commissioner.)

Public Health Manual of Kentucky.

Bulletin of the State Board of Health of Kentucky for October, 1919 (Vol. VIII, No. 9). It contains the health laws, rules and regulations of the state, and certain court decisions under the health laws. Board covers. 299 pp. (Apply to the State Board, S. E. Corner 6th and Main Streets, Louisville, Ky.)

Annual Convention of the Illinois Firemen's Association.

Report of the proceedings of the Thirty-first Convention held at Granite City, Ill., on January 14, 15 and 16, 1919, including addresses in full and statistical information regarding the fire departments and equipment of all the cities and towns of the Association, listed alphabetically. 227 pp. (Apply to Walter E. Price, Secretary, Champaign, Ill.)

Summer Sessions of City Schools.

A favorable report on the summer-school and all-year-school movements in the cities of the United States, based upon investigations of a large number of these schools from the standpoints of expense, progress and attendance of pupils, and health of pupils. 1918. 45 pp. (Issued by the Bureau of Education, Department of the Interior, Washington, D. C.)

North Dakota Society of Engineers.

Report of the proceedings of the 10th and 11th annual meetings of the North Dakota Society of Engineers, 1919. 112 pp. (Apply to E. F. Chandler, Secretary-Treasurer, State University, Bismarck, N. Dak.)

First Year of Commissioner-Manager Government in Kalamazoo, Mich.

April 1, 1918, to April 1, 1919. 32 pp., illustrated. (Write to Harry H. Freeman, City Manager.)

Pasadena's Municipal Lighting Works Department.

Twelfth annual report, 1918-1919. 32 pp., illustrated. (Apply to C. W. Koerner, General Manager and Electrical Engineer, Municipal Lighting Works Department, Pasadena, Calif.)

The Department of Public Welfare, Dayton, Ohio.

An interesting, well-illustrated 24-page report of the work that is being carried on by the various bureaus and divisions of this active department. (Apply to D. F. Garland, Director of the Department.)

Annual Report of Rockland, Me.

Statements of the municipal departments for year ending February, 1919. With Municipal Register for municipal year 1919-1920. 92 pp. (Apply to O. E. Flint, City Clerk.)

Parks and Recreation, St. Louis, Mo.

Annual Report of the Division of Parks and Recreation of the Department of Public Welfare for the fiscal year ended April, 1919. 84 pp. Many illustrations. (Address Nelson Cunliff, Commissioner of Parks and Recreation.)

School Department, Sacramento, Calif.

Annual Report, 1917-18-19. 120 pp. Illustrated. (Apply to Charles C. Hughes, Superintendent and Secretary, Board of Education.)

Department of Wharves, Docks and Ferries, Philadelphia.

Annual Report of the Department for the year ending December 31, 1918. 163 pp. Map, drawings, photographs. (Address George S. Webster, Director of the Department, Bourse Building, Philadelphia, Pa.)

Board of Water Supply, New York City.

Thirteenth annual report, for the year ending December 31, 1918, accompanied by the report of the Chief Engineer. 77 pp. + numerous attached statements and tables. Illustrated. (Apply to the Board of Water Supply, Municipal Building, New York, N. Y.)

Make Streets Clean

We manufacture "STUDEBAKER MODEL" Flushing Units, combination Flushing and Sprinkling Units, Pressure Sprinkling Units and Gravity Sprinkling Units, which can be purchased mounted on practically any of the leading makes of motor trucks.

We also manufacture a small Horse Drawn Uniform Pressure Flusher for communities who do not have sufficient pavement to warrant purchasing a motor flusher, yet want an economical, efficient and sanitary street cleaning machine.

Report of Andrew Macaulum, Commissioner of Streets, Ottawa, Canada, states that over 2700 miles of streets were flushed cleaner than ever before with two "STUDEBAKER MODEL" flusher units mounted on motor trucks, saving \$12,150.00 in one year.

Upon request, we will be pleased to send you cost data on Flushing and Sprinkling, compared with other methods of street cleaning.

Let us send you some interesting literature on street cleaning equipment.

Municipal Supply Co.

South Bend, Indiana

Methods, Materials and Appliances

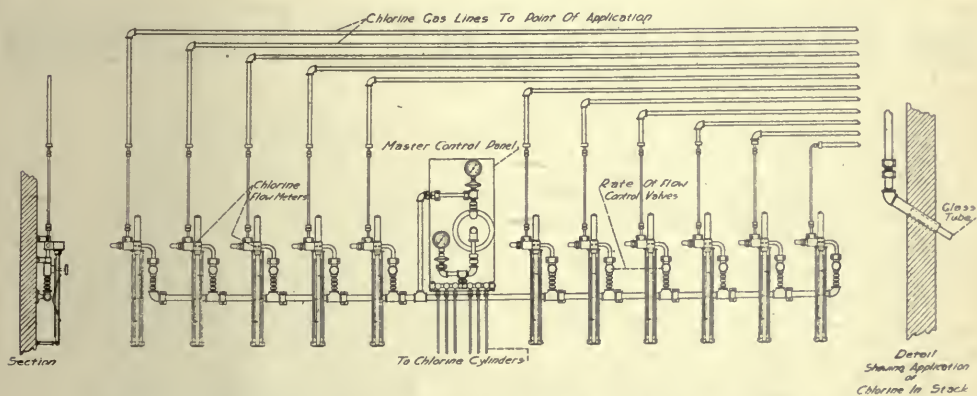
News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Reducing Obnoxious Odors

One of the chief objections raised against garbage incineration and reduction plants and many industries is the volume of obnoxious fumes rising from their stacks. This form of nuisance, in many cases not actually injurious to health, is so annoying as to be the cause of much litigation and dissension. In order to overcome the objection to the location of utilities or industries producing obnoxious gases, Wallace & Tiernan, Inc., 349 Broadway, New York City, well-known manufacturers of chlorine control apparatus for sterilizing water, are now making machines for introducing chlorine gas into the stacks of plants producing objectionable organic odors, for the pur-

date the connection of six standard chlorine containers, a tank pressure gage for indicating the pressure of chlorine in the cylinder and a back pressure gage for indicating the reduced pressure of the chlorine gas after passing thru the reducing valve.

The outlet from the master control panel connects to a $\frac{1}{2}$ -inch galvanized iron pipe header. From this header a branch is taken off to supply each stack, the flow to the stack being controlled by means of a suitable control valve, and the flow being indicated by means of a suitable manometer type orifice flow meter. This meter is calibrated to indicate the flow of chlorine in pounds per twenty-four hours against atmospheric pressure. Each flow meter is connected to a $\frac{1}{2}$ -inch galvan-



COMMERCIAL CHLORINE CONTROL APPARATUS FOR DEODORIZING OBNOXIOUS FUMES FROM FLUES AND STACKS

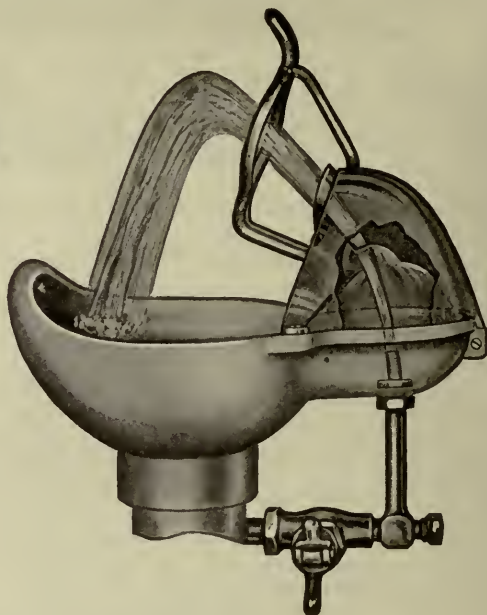
pose of deodorizing the obnoxious gases. One of these installations has been in operation for some time at the works of the Corn Products Refining Plant, Edgewater, N. J. There are eleven stacks from feed, gluten and germ dryers. The chlorine control room is situated on the second floor of the building in which the kilns are located, and the chlorine gas is conducted from this room to each of the stacks thru $\frac{1}{2}$ -inch galvanized piping.

The chlorinating apparatus consists of a master control panel supplying the chlorine gas to a common header, from which the flow of gas to each stack is regulated by means of an orifice type flow meter. The master control panel consists of a manifold to accommo-

dated iron pipe line by means of a flexible connection, and these iron pipe lines conduct the gas to the various stacks. The gas is introduced into the stack proper thru a glass tube cemented into the galvanized iron pipe. The stacks are 4 feet in diameter and are from 5 to 75 feet from the control equipment. Ordinarily there are added 2,500 tons of grain to the kilns each day. The total loss of weight is 40 per cent per day. This means that 1,000 tons of moisture and gas from the grain passes up the stacks each day, or a total discharge of 91 tons per stack. The chlorine is added at the rate of 7 pounds per day per stack, i. e., at a rate of 0.0038 per cent chlorine per weight. The use of chlorine materially reduces the

Puro

*---with the
accent on
the Pure*



The PURO LIBERTY Fountain

WE say "pure" advisedly—because the Puro Liberty drinking fountain is nearer to 100% sanitary than any other fountain manufactured. The trouble with most of the so called "sanitary fountains" today lies in the fact that they are designed with vertical jets. Such a fountain does more harm than good, because the water which has touched the lips may fall back upon the metal top or bubblers and seriously contaminate the source of supply. The next drinker gets the germs. This applies to both the intermittent and continuous flow fountains.

THE PURO LIBERTY FOUNTAIN

is doubly safe—because it has a sloping stream and a mouth guard. It is utterly impossible for lips to touch the jet or for the water to fall back. The Puro is the most sensible and most sanitary drinking fountain on the market today. It fulfills all requirements of cleanliness, economy and design. Equip your public buildings and parks with Puro Liberty Fountains.

Write us for illustrated descriptive matter.

Puro Sanitary Drinking Fountain Company
HAYDENVILLE, MASS., U. S. A.

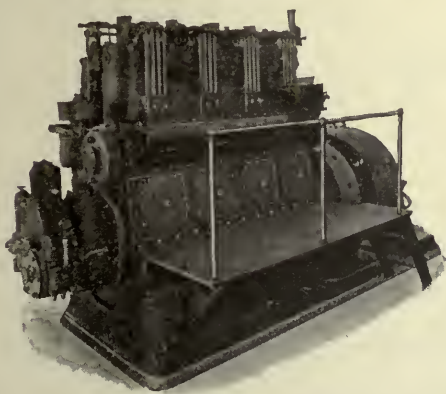
odor of the gas issuing from the stacks. Immediately at the outlet of the stacks there is an odor as of steam and moist corn meal. This odor, however, is very slight and cannot be detected a few feet from the stacks.

The use of chlorine gas suitably controlled in this manner will undoubtedly prove advantageous for the reduction of odors at garbage plants, reduction works and incinerators.

The Pittsburgh Heavy-Duty Oil Engines

During the last few years engineers in this country have displayed much interest in the high compression ignition type oil engines, originally developed in Holland by the Brons Motorenfabriek of Appingsdamer, but better known in America as the Hvid type motor. The improved type of Hvid engine offered by the Pittsburgh Filter & Engineering Company of Pittsburgh, Pa., thru its New York office, 280 Broadway, is making rapid strides and gaining widespread attention because of the unusually high degree of efficiency secured from this prime mover.

The company operates an extensive plant at Oil City, Pa. A large portion of this plant is devoted to the manufacture of Hvid type motors. The company also manufactures Diesel type oil engines.



THE NEW HEAVY-DUTY OIL ENGINE FOR MUNICIPAL PLANTS

The designer has adhered as closely as possible to the modern Diesel engine construction, and has aimed to combine simplicity in operation with accessibility, to reduce operating attention and operating cost. The design covers a cylinder unit of $8\frac{1}{2}$ inches bore by 12 inches stroke, which at 400 r. p. m. develops 25 b. h. p. and is so arranged from a manufacturing standpoint as to admit of sufficient flexibility to include a wide range of sizes in units of two cylinders to six cylinders for both marine and stationary service. The engine is rugged in construction for heavy-duty service, to meet the demand for a well-balanced, quiet-running, simple, reliable and economical power. Ex-

cellent shop facilities and the use of jigs and templates insure interchangeability of parts.

The specific claims for this engine in the municipal field for electric light and power plants and water-works are:

1. Modern design embodying up-to-date Diesel and steam engine construction, supported by 18 years of substantial and successful engineering experience

2. Rugged in design for heavy-duty service, embodying the most economical principle of combustion, combined with the best available materials, workmanship and engineering skill in line with the demand for a well-balanced, quiet-running, simple, reliable and economical power

3. An effective and efficient cooling system

4. A unique, economical and reliable lubricating system

5. Quick starting from cold to full load in a few seconds

6. Smokeless exhaust an index of complete combustion. Fuel consumption guaranteed not to exceed 0.6 pounds per b. h. p. hour

7. All parts standard gauge thoroly jugged and tooled to insure interchangeability and uninterrupted service

A Police Register System for Small Communities

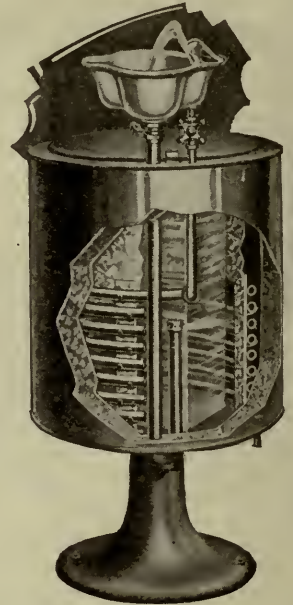
The old system of having watchmen and policemen carry a clock with them, taking it from station to station where the recording keys are located, has been superseded by a much more practical police register which is manufactured by Hardinge Bros., Inc., 41-7 East Ravenswood Avenue, Chicago, Ill. In this system the clock is permanently located and the patrolman carries the recording key. This not only relieves the patrolman of the burden of carrying the clock but also makes it possible to keep the record of any number of patrolmen on the same clock. The installation of the police register is very simple, and its operation as accurate as the patrolmen's clocks which are still used in many places. It is claimed that it will last a lifetime and that there is practically no maintenance cost.



THE BOX THAT PROTECTS THE POLICEMAN, THE CITY AND THE TAXPAYER

Puritan **CANTONMENT** *DRINKING* *FOUNTAINS*

Designed for and adopted by the Government
for use in cantonments and Naval Training Sta-
tions during the war—now used by the largest
industries and schools.



Patented
S-570

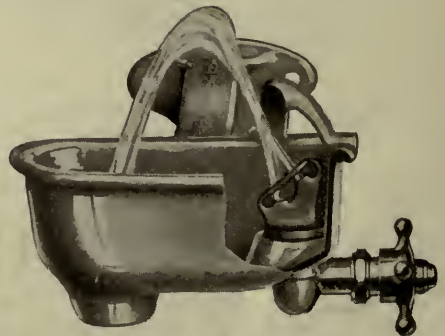
SANITARY — PRACTICAL — FOOL-PROOF

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PURITAN S-566 "CANTONMENT"



Patented
Sectional View of S-566
Showing Practical Drinking Mound
Formed in Stream

Plant Damaged by Fire Has Already Resumed Operations

The Marchant Calculating Machine Company plant at Emeryville, Oakland, Calif., which was partially destroyed by fire caused by a defective heating system, is already being rebuilt and in sixty days' time will again be manufacturing calculating machines, as the saving of the most important tools, dies and jogs enables the company to start production at once. The plant, long a show place of the west coast, was built in 1915 and had just reached the point of highest production in the history of the company. It was considered by government officials to house one of the finest and most complete tool and die departments in the West. A recent change in manufacturing methods demanded the installation of new automatic machinery, which was on its way to the west coast at the time of the conflagration. This machinery will be installed in temporary quarters until such time as the reconstructed units are finished. The officers and directors are endeavoring to divert what stock is immediately available to the large centers, where the demand for the Marchant has been greater than ever before. Service stations will be maintained in the principal centers, and the Marchant Calculating Machine Company will endeavor to render as near a 100 per cent service as possible.

Yeomans Brothers Move to New Quarters

Yeomans Brothers, manufacturers of electric pumping machinery, Chicago, Ill., recently announced that they have moved their general office and factory to their new building at 1417 Dayton Street, where they now have at their command greatly improved facilities for

the manufacture of electric pumping machinery and sewage ejectors.

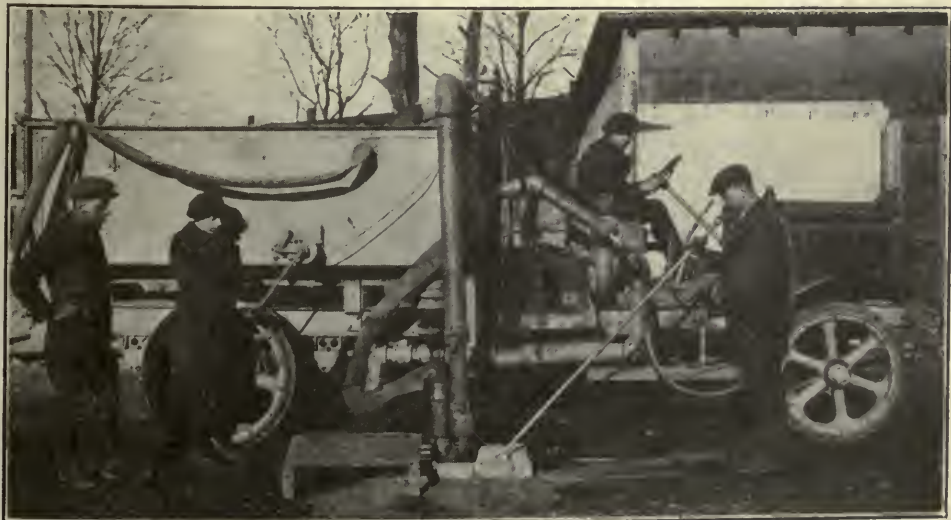
Crane Appointed General Manager

The New York Continental Jewell Filtration Company, Nutley, N. J., has announced that Arthur N. Crane, formerly General Sales Manager, has been appointed General Manager to succeed the late Robert E. Milligan. D. C. Williamson, who for nearly twenty years has been responsible for the design of the filtration plants and apparatus manufactured by this company, continues as Chief Engineer, and E. K. Sorenson as Secretary and Assistant Treasurer.

This company designs and builds complete filtration water softening and iron removal plants as well as building from plans and specifications of other engineers.

First Auto Educator in Canada in Use in Halifax, N. S.

Halifax, N. S., has purchased the thirty-sixth Auto Educator manufactured by the Otterson Auto Educator Company, Springfield, Ohio. The other thirty-five machines are in use in different parts of the United States, in Honolulu, and in many of the cantonments. This Auto Educator is motor-driven and operated, and the tank and machine are mounted on a 5-ton truck chassis. The method of cleaning is by water pressure. In order to thoroly test out the machine in Halifax, a demonstration was given in cleaning a catch-basin which had been allowed to accumulate dirt for some time. The material was first loosened and then taken out by the Educator in quick time, much to the satisfaction of the municipal officials gathered to witness the demonstration.



THE NEW OTTERSON AUTO EDUCATOR RECENTLY ACCEPTED AND PURCHASED BY THE CITY OF HALIFAX, N. S., AFTER SEVERE TESTS

Save Money on Your Street Lighting

The cost of installing new standards in your city may be prohibitive.

However, your street railway companies must have trolley poles to support their wires. Why not, then, get them to co-operate with you in securing

ELRECO Combination Poles

which will give you street lighting as fine as any city at a much lower expense than the cost of separate standards?

Wooden poles are an eyesore. ELRECO poles are an improvement and will save you the cost of underground construction, the cost of extra lamp standards, the expense of high maintenance costs.

We have placed ELRECO poles in many leading cities. Let us send you our catalogue showing our complete line.

**Electric Railway
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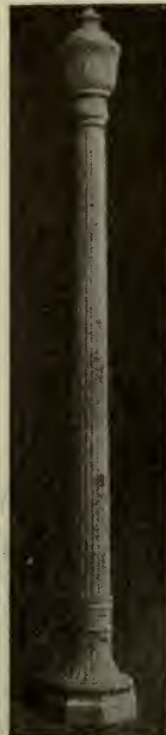


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With General Electric Lighting Units



Youngstown, Ohio, Union Metal White Way Lighting on West Federal St. 800 standards.



The Right Way for The White Way

Out of an experience dating back to the very beginning of modern street lighting, Union Metal Engineers are pointing out "the right way for the white way."

Union Metal leadership in street lighting systems is not an advertising boast but an engineering fact. It is based on our creative designing work with the country's leading engineers and architects—on our installations in over 1,000 principal cities—and lastly upon the exclusive Union Metal idea of a pressed metal standard—stronger, safer—less costly and far more beautiful than the old fashioned cast iron post. The Union Metal Organization are not simply manufacturers. Our Engineers assist in the design and layout of entire systems.

FREE MANUAL

"Ornamental Street Lighting."

The Union Metal Mfg. Co.
Largest and Oldest Manufacturers of Ornamental Lighting Standards

Canton, Ohio

Design No. 792 with General Electric Form 9 Novalux Unit.



A SIDE-DUMP, DROP-FRAME TRAILER MADE BY THE TROY WAGON WORKS COMPANY, TROY, OHIO

Trailers for Ash and Garbage Collection

The collection and disposal of garbage and ashes is one of the great municipal problems. The Troy Wagon Works Company, Troy, Ohio, has put onto the market a drop-frame trailer with an automatic side-dump body, which is designed primarily to meet the need in this field. It is easily loaded, since the loading edge of the body is only 60 inches from the ground. The short wheel base allows a short-turning radius, which is particularly convenient in alleys and narrow roadways. The question of motor truck hauling or horse hauling of these trailers is very easily taken care of by the provision of team tongues, so that the trailers can be pulled thru alleys by horses for loading, and then hauled to a central point of the district where they can be picked up in trains by tractors or motor trucks and hauled to the incinerator or dump.

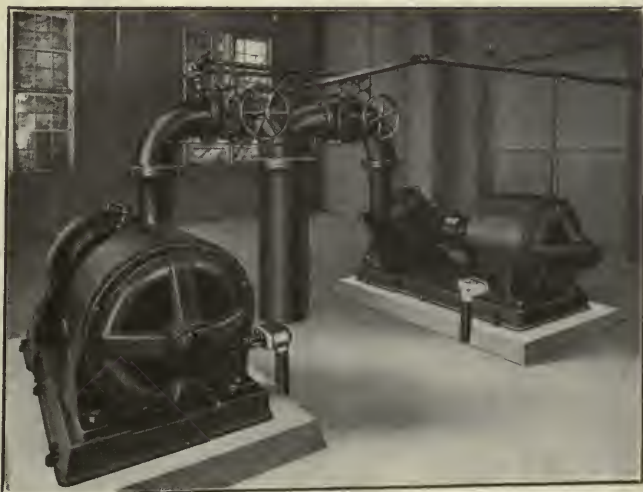
Painting Reduces Deterioration

Recently a very favorable report was received by the Joseph Dixon Crucible Company, Jersey City, N. J., from W. H. Lawrence, Superintendent of the Water-Works Department, Kalispell, Mont., regarding Dixon's Graphite Silica paint which has been used in the water plant under his charge. An interesting photograph, which was used as a cover illustration on the October issue of the Dixon house organ, *Graphite*, shows

the smoke-stack of the power plant at Kalispell, which, together with the boiler fronts, were painted two years ago with Dixon product and are still in excellent condition. This paint is widely used among water-works officials for stand-pipes, tanks, towers, smoke-stacks and boiler room equipment. The accompanying illustration shows part of the pumping equipment in the Kalispell water-works, consisting of electrically-driven centrifugal pumps manufactured by the Worthington Pump & Machinery Company, 115 Broadway, New York City.

Equipment Firms Consolidate

Waldo Brothers, Inc., and Harold L. Bond Company, both well-known firms, have united to form Waldo Brothers and Bond Company, with offices and sales rooms at 181 W. Congress Street, Boston, Mass.



ELECTRIC-DRIVEN CENTRIFUGAL PUMPS, KALISPELL, MONT.



STEAM HEAT NO BOILER

For the utmost in satisfaction and economy in heating—particularly for auxiliary service in locations where the central plant does not give the required heat at night or in fall and spring there is nothing better than



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Each radiator is always instantly ready for use as a separate, complete, permanent heating unit or part of a system. A match starts it—automatically regulates gas flow—locations can be kept at any temperature desired. No dirt—waste or bother.

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Attach Bean Spray Gun, through one line of 5/8 inch hose, to your biggest park power sprayer, and one man will do work of *three* men with ordinary spray rods and nozzles. Put other two men on other work, saving time, labor and money.

Pull fog spray, long distance spray (to reach tops of tall trees), or shut off at simple turn of wrist. Most convenient, durable and efficient gun ever made.

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Learn all about it in interesting folder sent free. Three of four of these guns will put from six to eight men on other work. Think of Saving!



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TIRES**

"BEST IN THE LONG RUN"

VOLUME XXII

NUMBER 2

The American City

NEW YORK

FEBRUARY,
1920

Modern Car Service at Moderate Fares

How the Light-Weight Automatic or Safety Car Operated by One Man Is Solving for Many Cities the Problem of Modernized Service at Little or No Increase in Fare

By Walter Jackson

Consultant on Bus and Car Service, Brooklyn, N. Y.

THE connection between the well-being of a community and the quality of its street railway service is so intimate that any decline in the usefulness of the latter is certain to injure the business, the social life, and even the health, of the city. Yet that decline in usefulness has been the outstanding factor of many increases in rates of fare. Whether or not the railway got all the additional revenue that it needed to meet advancing costs, the augmented revenue came in almost all cases from a smaller number of riders. This meant that the patronage tended to narrow down to compulsory riding, particularly the rides between work and home. Contrariwise, convenience riding, such as shopping tours, trips to friends or the movies, lunching at home for health's sake, etc., went largely by the board. Actually, the net result to the company was not as good as the increase in gross indicated because the drop in short-ride convenience customers naturally increased the average cost of carrying the remaining customers. Such losses have not been temporary by any means, altho not so high as in the first days of indignation. In all cases, however, they have left their mark on both the railway and the community for some time to come.

But even before the electric railway lost riders on account of higher fares or abbreviated service, there appeared a phe-

nomenon that made thinking operators seriously question the validity of big-car, long-headway operation; that phenomenon, of course, was the jitney. To their amazement and chagrin, the operators of electric railways discovered, during 1914 and 1915 particularly, that people preferred a dilapidated Ford to a street car Pullman because the Ford came oftener and got there first!

For an "unwisely" long time most of these operators tried their best to choke off this shabby but effective competitor thru demands for equal responsibility in bonding, in service, in taxation and so forth. This effort was but partially successful; the public had tasted the blood of frequent and faster service and therefore was not disposed to put the jitney out of business unless the electric railway offered something good enough to kill the jitney thru their own free choice.

It was this incentive, plus that presented by the incursions of the private automobile, that led to the invention and development of what is now known so widely as the light-weight safety car. If people were to cease patronizing the jitney or to refrain from using personal machines for short rides, it was essential that the electric railway should have a carrier so light and so economical to operate that 50 to 100 per cent more service could be offered without an increase in operating expense.



Courtesy of Westinghouse Company

INTERIOR VIEW OF SAFETY CAR

The Safety Car an Experiment in 1916

While one-man cars had been introduced earlier, the very first one-man, light-weight safety car with automatic equipment was placed in service early in 1916 at Seattle, purely for experiment. Late in the same year, Fort Worth received ten cars, which were sufficient in number to equip the Summit Avenue line of that city on the basis of some 50 per cent more service than before. This installation is rightly considered the classic of the safety car because it demonstrated so conclusively that the old theory of big cars and long intervals was wrong and that the new theory of small cars and short intervals was right. Roughly speaking, the increase in traffic paralleled the increase in service. Similar results were reported from Bellingham and Everett, Wash., which had been equipped during 1917.

One would have supposed that the need of meeting private and j'tney auto competition would have proved incentive enough for the electric railways. Unfortunately, this did not prove to be the case. At last came the still greater need to meet rapidly increasing costs of fuel, wages and material—a need, also, that was universal, whereas automobile competition was at first largely confined to the Pacific Coast and a number of central and southwestern cities. Faced by this tidal wave of rising costs against a fixed fare, the electric railways as a class were strongly tempted to take what looked like the easiest way—a flat increase in fare, first to 6, then to 7, 8 and even 10 cents. Of course, few increases

were granted out of hand. In the meantime, finances fell farther and farther behind. When the increases did become effective, many railways came to a sickening realization of the meaning of: "You can lead a horse to water but you cannot make him drink!" The drop in short-ride traffic, the waste in car hours due to awkward odd fares, the increased cost of handling each remaining rider, the stunning rises in the cost of fuel and wages,—the two leading items of operating expenditure,—all these and other events simply compelled a deeper study of the technical resources of the art.

And thus is the safety car finally coming into its own, as these figures show: In 1917, only 280 out of 1,998 surface cars ordered were safety cars; in 1918 the ratio was 644 to 1,842, while in 1919 the ratio was 1,383 to 2,129. From humble beginnings in cities of 20,000, this car is now ordered by the hundred for a city of 2,000,000 (Brooklyn); from patronizing admissions that it would be fine for turning 30-minute services (?) into 15-minute headways, it is now operated on headways down to 2 minutes or less; and one is no longer obliged to seek the safety car in but one or two corners of the United States, but may find it in any of some 125 to 150 cities and towns.

What Is a Safety Car?

By this time the reader who has not yet seen this proof of a new spirit and practice in electric railroading will be wanting to know what this marvel is, anyway! His curiosity can be quickly satisfied. The one-man, automatic, light-weight, safety car is, first of all, a car so moderate in size and so equipped with automatic appliances (including quick-stop brakes and quick-start control) that it can be operated by one man at a greater schedule speed than is usually possible with old two-man cars on the same route. A safety car seats 32 or 35 passengers (mostly in cross-seats), all of whom enter and leave via the front platform directly under the control of the man who controls the starting and stopping of the car. His controller, air brake and door and step mechanisms are so interlocked that a

person cannot board or leave the car while it is in motion. Furthermore, the controller is provided with the same deadman's handle found hitherto only on large, high-speed trains. Hence any weakness or lapse on the part of the car operator leads to the automatic cutting off of power and the full emergency application of air brake and air sander. At the same time, so carefully have all the problems been worked out that the emergency application does not, contrary to normal applications, cause the automatic opening of the doors. If the doors were to fly open before the car came to a stop in such emergencies, some excited passengers might throw themselves thru the opening. Therefore the emergency application leaves the doors so balanced that they can be opened only by a push of the hand, by which time the car would be at a standstill.

From the foregoing rough outline it will be clear that the title "safety car" is deserved in the light of this immediate personal control by the car operator, backed by automatically interlocking appliances as described.

While the size and motive equipment of the safety car make it suitable for the economies possible from employing one man for every 32 seats instead of, say, two men for 40 or 44 seats, the great reduction in the weight of the car permits a proportionate reduction in fuel requirements per passenger carried. The safety car weighs between 450 pounds to 500 pounds per seat,

whereas earlier types of cars weigh from 800 to 1,350 pounds per seat. It is obvious that with its two greatest operating accounts cut in half the electric railway fortunate enough to have such cars is in an excellent position to try the revenue-building effect of greater frequency of service. Indeed, with operating costs reduced to pre-war levels, some companies have been able to retain the 5-cent fare. Other railways have found that better service and a higher fare for that service meet no objection from the public—if a 100 per cent increase in traffic is a criterion of the approval of the public.

Whether a given electric railway can retain or return to the cherished and convenient 5-cent fare must necessarily be a matter for local analysis. In some cases it would be to the actual advantage of the railways to operate safety cars at 5 cents because of the still greater increase in riding and the higher schedule speed that would result from easier fare collection. In other cases, the railway may be found entitled to a breathing spell during which it can make up for past losses and pay quickly for the new cars. To the writer's way of thinking, the day of a blanket fare for all the United States and for an unlimited distance in any given city has gone, and gone deservedly. In future, fares should be based upon local costs and requirements, not upon the fares in some other city whose conditions may be, and usually are, widely different.



THE OPERATION OF 53 PER CENT SAFETY CAR MILEAGE TO DATE IN TAMPA, FLA., HAS KEPT THE 5-CENT FARE FOR THIS PROGRESSIVE CITY OF THE SOUTH

Terre Haute's Modern Service at the Ancient Fare

That many railways could prosper at a 5-cent fare if they went to safety-car operation is surely indicated by the experience of the Terre Haute lines of the Terre Haute, Indianapolis & Eastern Traction Company. Terre Haute is not essentially a promising city from the electric railway standpoint, but its management had the faith to try, and the municipality the vision to permit, the installation of safety-car service. Beginning December, 1918, one line after another was equipped, until by December, 1919, practically all the city service was safety-car mileage. Roughly speaking, this service has been almost doubled. Twenty-six out-of-date cars have been replaced by fifty-three down-to-date cars; the schedule speed has been raised from a range of 8 to 9 miles an hour to one of 10 to 11 miles an hour; the wages of the car operators have been increased; and the cost and severity of accidents have been reduced. Best of all, the public has responded so heartily to the improved service that patronage still continues to outstrip additional car-miles even when later safety-car operation is pitted against the initial safety-car operation. For example, the first 12 days of January, 1920, compared with the same period of 1919, show 25 per cent more patronage against 20 per cent more service, in addition to the larger early gains. The net result is that the car-riding habit of

Terre Haute, now affecting 75,000 people, is actually better now than it was before the advent of the private automobile and the jitney. There are plenty of the former, but the latter have faded out in the face of real trolley service. As to fares, let us quote the opinion of Edward M. Walker, general manager of this company, in the following account from the *Terre Haute Star* of December 1, 1919:

"As a result of the adoption of the safety car here, we shall not have to petition for an increased fare as long as conditions remain approximately as they are. Only a tremendous increase in the price of fuel and materials could cause us to abandon the 5-cent fare, with which we are able to give a first-class service by the use of the safety car. In my opinion, this vehicle is the most successful in use. I am sure that our patrons will agree with me that we made no mistake in adopting it."

How Can the Community Get the Most Out of Safety Car Operation?

It was said in the opening of this article that declining usefulness of an electric railway was an injury to the community. It is equally true that increasing usefulness of a street railway is a benefit to the

BE IT ORDAINED BY THE COMMON COUNCIL OF THE CITY OF TERRE HAUTE:

Whereas the city of Terre Haute has requested the Terre Haute, Indianapolis & Eastern Traction Company to improve the street car service in said city, and in response thereto said company has undertaken to comply with the city's said request in that behalf, said company in a written communication has advised the city that it has conditionally arranged for the purchase and use in the said city of 30 new street cars of the type commonly known as Quick Service or Safety Cars, which are particularly described in the American Car Company's specifications No. 100 and in such specifications called the Birney Safety Cars; believing that it is in the public interest, the city desires to meet the conditions specified in said company's communications respecting such matter, reference to which is hereby made. Therefore:

Section 1. On and after the adoption of this ordinance by the Common Council of the city of Terre Haute and the approval thereof by the Mayor of said city, it shall be lawful for the Terre Haute, Indianapolis & Eastern Traction Company, its grantees, successors and assigns, to operate in, along and upon the streets of said city either exclusively or in connection with the use and operation of the type of street cars now and heretofore used and operated in said city, the type of street cars commonly known as Quick Service or Safety Cars and of the general type designated by the American Car Company's specifications No. 100 and particularly called the Birney Safety Car, with only one operative for each such car.

Section 2. All ordinances and parts of ordinances in conflict with the provisions hereof are hereby repealed.

Section 3. An emergency is hereby declared to exist for the immediate taking effect of this ordinance, and the same shall therefore be in full force and effect on and after its adoption by the Common Council of said city and its approval by the Mayor of said city.

CHARLES R. HUNTER,
Mayor.

(Passed July 3, 1918.)
Terre Haute, Ind.,
July 5, 1918.

community. This being admitted, it follows that the introduction of the one-man safety car on the basis of more cars and more seats per unit of time is something that every live municipal official and civic worker will want to encourage. It may not be easy for the chamber of commerce president who uses an automobile to visualize the state of mind of his workmen who have been cheated out

of a "punctuality bonus" because of broken-down cars; it may not be easy for the merchant to grasp the fact that infrequent railway service is driving his customers to use the telephone and buy less or even to take recourse to the mail-order catalog; it may not be easy for the city officials to realize that the difference between school children and store clerks bringing down a dry lunch and riding home for a hearty meal is a factor in the vital statistics of the community; and it may not be easy for the picture-house proprietor to see the connection between frequent car service and well-attended shows—but we will bank on the fact that it won't take five minutes to make the matter clear to any of these parties who are accustomed to hustle for a living!

Indeed, the most curious aspect of the safety car development is that it has been easier to convince the men whose gains are indirect than the men—the railway operators and railway owners—whose gains are so obviously direct. Only within the last week we heard of one timid soul that bleated: "Let's try what a 10-cent fare will do before you ask us to buy these new cars." And this in a city where any fairly well-to-do citizen may have an automobile and where lack of service forces some of the factories to carry their workers to and from the plants in motor trucks with improvised seating!

This fearsome frame of mind seems to arise from the feeling that whatever the electric railway does—even at the suggestion of the municipality—will be considered the wrong thing. The fear that labor would object to one-man operation has been particularly strong. The writer's own experience in a public heckling by genuine proletarians convinced him that sane and sensible workmen would rather have a 5-minute



ON BRIDGEPORT'S FIRST SAFETY-CAR LINE SERVICE AND TRAFFIC HAVE BEEN DOUBLED IN ONE YEAR'S OPERATION

In the standard safety car every passenger has the pleasure of facing forward

service with fast and new one-man cars than a 10-minute service with slow and old two-men cars. As these very figures indicate, safety car operation of the "selling transportation" type is more likely to increase rather than decrease the eventual number of car operators. What is even more pertinent is that the elimination of the laborious hand-brake and hand-operated doors attracts and holds men of the salesman class. It has taken a long time to realize that the strength of a Samson and the suavity of a Chesterfield are not usually found in one individual at 50 to 75 cents an hour! The almost automatic functioning of the safety car, and of larger cars with air-operated brakes, doors and steps, is therefore going a long way toward the furtherance of that courtesy longed for so eagerly by street railway patrons.

No, dear readers, the millennium of unlimited rides, unlimited service and unlimited courtesy at zero fares or less is not going to come thru mass production of car miles with the automatic tool known as the safety car, but it is a pleasant fact that the safety car is at least one thing that can prove of equal benefit to both the community and the electric railway that serves it. Let 1920 apparatus and 1920 service go hand in hand.

Salary or Glory—Which Will Get and Keep the Best Municipal Officials?

Mayors Say Adequate Salary Necessary

“WHAT is your candid opinion of the practice of smaller cities in paying no salaries to mayors.”

This was the question put by THE AMERICAN CITY to mayors all over the country recently. One hundred and ten mayors, representing thirty-nine states, responded. They speak out of the fullness of their experience, and what they have to say should be of interest to budget makers, and particularly to charter makers.

From a town in Illinois comes this observation: “It is the only correct way, for it calls for civic patriotism.” From Georgia: “Small cities are in no position to pay salaries.” Another, a mayor from Illinois whose salary was reduced from \$2,100 to \$1, says, briefly: “Our town is broke. I am a drafted man. The entire Council, the City Attorney, and the City Treasurer are working without salary to see if we cannot put the town on its feet.” Another mayor from the same state says: “The income of many towns is so limited that they have no funds for necessities. I have served three terms without pay in order to make necessary improvements for which the city needed funds worse than I did.”

The mayors of two cities in California apparently agree with the first Illinois mayor quoted above, for they say: “Public spirit and civic duty should be incentive sufficient to fill the position in small cities. The salary might be a disadvantage.” A Michigan man restates this as follows: “I believe that in small cities you will receive a higher standard of public spirit and citizenship from a mayor who receives no salary.” From Missouri comes a strong endorsement of the no-salary plan. “I think it is good practice,” writes one mayor who receives \$2,400 per year. An Illinois mayor writes: “Salaries should be small, if any. Mayor should be willing to give his services for the good of the town in which he lives.”

On the other side of the question stand one hundred mayors who believe that “free work is too often slighted work”; that “the

servant is worthy of his hire”; that “cities should pay reasonably for all good services, just as do private corporations. There is no reason for any other method.” These three quotations are from mayors in Alabama and Illinois. Mayors from Indiana say: “Tendency is to produce inefficient mayors, inattentive to city affairs”; “Present method is absolutely wrong, for a poor man is disqualified from holding office.”

Three mayors in Arkansas agree that “salaries should be in keeping with the work performed.” A Connecticut mayor, who draws \$2,000 per year, evidently does not feel overpaid, for he says: “This city of 35,000 should pay its mayor \$10,000 if he does his duty and is any good.” A Mid-Western mayor, whose salary has been reduced 20 per cent but is still \$4,000, says emphatically: “I am in favor of paying salaries to *all* mayors.” “Lots of grief and no compensation,” from an Iowa executive, suggests that all the money in the corn belt does not find its way to municipal officers. His salary is the munificent sum of \$1 per council meeting. “Ridiculous,” writes a Michigan mayor of the present no-salary practice. He receives \$100, which is \$50 more than was paid before the war. “More salary would be very acceptable,” remarks a man from Missouri, who apparently does not need to be “shown” that his service is worth more than \$50 per year.

From New Jersey comes this brief comment: “Impossible to get a good mayor without salary. The office in small towns is an empty honor.” Another New Jersey mayor says: “This town has 10,000 population. The duties of the mayor take from two to three hours per day. The no-salary plan is a mistake.”

One mayor from Mississippi condemns the practice of paying no salaries most vigorously: “It is wrong in principle and leads to petty graft.” One man reports: “No increase since the Civil War. Policy of no pay is very bad. Such towns get in service just what it costs them.”

All in all, the opinion of the large ma-

majority of the mayors responding can be summed up as one Montana mayor put it: "Get a good man and pay him well." Of the 110 reporting, only 7 reported larger salaries than they had before the war, and 4 reported decreases of from 20 per cent to 100 per cent.

This brings us back to the original question: Salary or glory—which shall we depend upon for results?

What Should the Fire Chief Be Paid?

"Let him work for the love of the game. Pay him the price of two suits of clothes and make him earn it."

"A better chief can be secured without salary unless he is paid the same as a chief in a paid department."

"Nobody works for nothing nowadays."

"He should not be paid unless his regular occupation is such that he incurs a loss by attending fires."

These are some of the conflicting answers to a question sent by THE AMERICAN CITY to fire chiefs all over the country. It reads:

"Should the chief of a volunteer department be paid a regular salary by the municipality?"

Of the 268 chiefs responding, 200 favored some compensation, 6 were opposed to any compensation, and the rest were either non-committal or failed to answer the question directly. In a number of these cases the answers seemed to indicate the conditions prevailing in their respective towns, rather than the judgment of the chiefs themselves.

In answer to a separate request for suggestions as to proper salaries for fire chiefs in cities of from 5,000 to 25,000, 25,000 to 100,000 and over 100,000, 125 chiefs responded with suggestions ranging from \$500 to \$3,600 per year for the smallest group of cities. The average of these 125 suggestions was \$2,014.

For cities of the next size—25,000 to 100,000, 103 chiefs made suggestions ranging from \$750 to \$10,000, the average being \$3,231. In regard to cities of over 100,000, only 87 chiefs responded, the lowest salaries suggested being \$1,000, the highest \$15,000, with the average \$4,663.

Of the 200 who favored a salary, 11 indicated their preference for a small salary, 42 stated merely that the chief should be properly compensated on a yearly basis,

with the implication that he should give a substantial portion, if not all, of his time to the work. Of those who suggested specific sums for the annual salary, 6 mentioned less than \$100 per year, 10 suggested \$100 per year or \$10 per month, 6 gave \$15 per month, 12 stated \$20 per month, and 15 proposed \$50 per month or \$500 per year. From this figure the suggestions jumped to \$100 per month with 4 proponents, \$125 per month with 3, \$150 per month with 3, and \$200 per month with one advocate. The last four proposals evidently contemplated a chief on a full-time basis.

Other suggestions related not to fixed payments on a monthly basis, but to allowances of \$2, \$3, \$4, \$5 per fire or alarm. One chief suggested \$50 per year for each fire company supervised. Another asked that chiefs receive their expenses to one convention of the International Association of Fire Engineers. Seven men proposed that compensation be based on the population served, one naming \$1 per month for each 100 inhabitants. Five suggested that the chiefs be paid on an hourly basis for time actually spent on repairing, inspecting or supervising work on apparatus. Two merely asked expenses, and three asked that the chiefs be compensated at least for damages done to clothing.

On the other side of the argument there were a group of men who evidently believed that a paid chief and a volunteer department were incompatible, for one of them said, "Paid men and volunteers are like oil and water; they don't mix." Another stated: "A volunteer is not a paid man. I have been a volunteer for 31 years and would not be if I were paid." This may sound a trifle like an Irish bull, but there is no mistaking the meaning or the sincerity or the public spirit of the New England chief who said it. From Iowa comes the same story: "The city of ——— pays \$25 per year and telephone rental. It is not enough, and yet there is always someone looking for the place."

Notwithstanding the willingness to render unselfish community service, it is evident from the answers received that as a group the present fire chiefs feel very strongly and almost unanimously that the chief of a volunteer department should be paid "not a mere pittance, but well."

An Effective Child Hygiene Program

How Newark, N. J., Came to Be a Leader in Infant Welfare Work

By Dr. Julius Levy

Director, Division of Child Hygiene, Department of Health, Newark, N. J.

NEWARK is naturally pleased with its record for the first six months of 1919, which shows the lowest infant mortality for any similar period in its history and places it with the cities that have the lowest infant mortality rates in the country.

The infant mortality rates for the first six months of 1919 for the thirteen leading cities of the United States were:

San Francisco	75.8
Newark	77.1
St. Louis	84.2
New York City	87.2
Manhattan	92.0
Philadelphia	88.9
Baltimore	94.4
Cleveland	96.9
Chicago	100.2
Milwaukee	103.9
Boston	104.2
Detroit	107.2
Buffalo	121.0
Pittsburgh	133.1

If the infant mortality rate of Newark for the first six months of 1918 had continued in 1919, 104 more babies would have died. This reduction in rate represents a saving to the families and the community of at least \$10,000, as it has been estimated by statisticians that every baby's life represents approximately \$100. This saving may be considered the dividend for Newark's additional investment of \$5,000 in its child hygiene work, which now totals \$20,000 a year. But, above all, the reduced rate represents "better babies," better homes, trained mothers, and is the best indication that Newark is building a sound foundation for its future citizens.

As it cannot be held that Newark is particularly favored by the character of its population or in housing or social and economic conditions that affect infant mortality, it is natural to look to the activities of the Department of Health as at least a very important factor in obtaining this low infant mortality record. The Division of Child Hygiene was established in 1913 and received an appropriation of \$6,000, which has been increased in the year 1919 to \$21,000. The program of child hygiene is based upon the belief that while the work

will prevent sickness and reduce mortality, its greatest value consists in the general spread of the knowledge of infant and child hygiene, of right ideas of the care and management of children which will show itself in greater healthfulness, greater vigor and greater resistance.

From the many activities included in this program of infant hygiene, it will be realized that infant mortality is indeed a complex question requiring complex and careful organization to make the preventive measures effective, and that a preventive program of the character outlined can be properly carried out only under the municipality.

Care of Infants and Little Children 1

The first approach has been made thru the supervision of new-born babies, knowledge of whom is secured from birth records. It is obvious that if we wait until mothers bring their infants to a milk station they will come, usually, when the infants are about three months old, when one-third to one-half of the babies that die in the first year are already dead and when a goodly portion of those who survive are already on the bottle. The most important single result of this section of our work is the considerable increase in maternal nursing. Of 5,000 supervised babies, 82.4 per cent were entirely breast-fed up to six months; another 13.5 per cent partially breast-fed up to six months, and only 4.1 per cent were artificially fed at six months of age. In order to maintain to the fullest the basic principle, "Every baby should be breast-fed," it has been found necessary to supply wet-nurses for the very poor babies as well as the rich.

I have a picture of a case of marasmus, a disease which was easily enough discovered several years ago, but which is so rare in the neighborhoods in which maternal nursing has been popularized that this picture shall be kept in our museum. When one of the nurses sent this picture to me it was

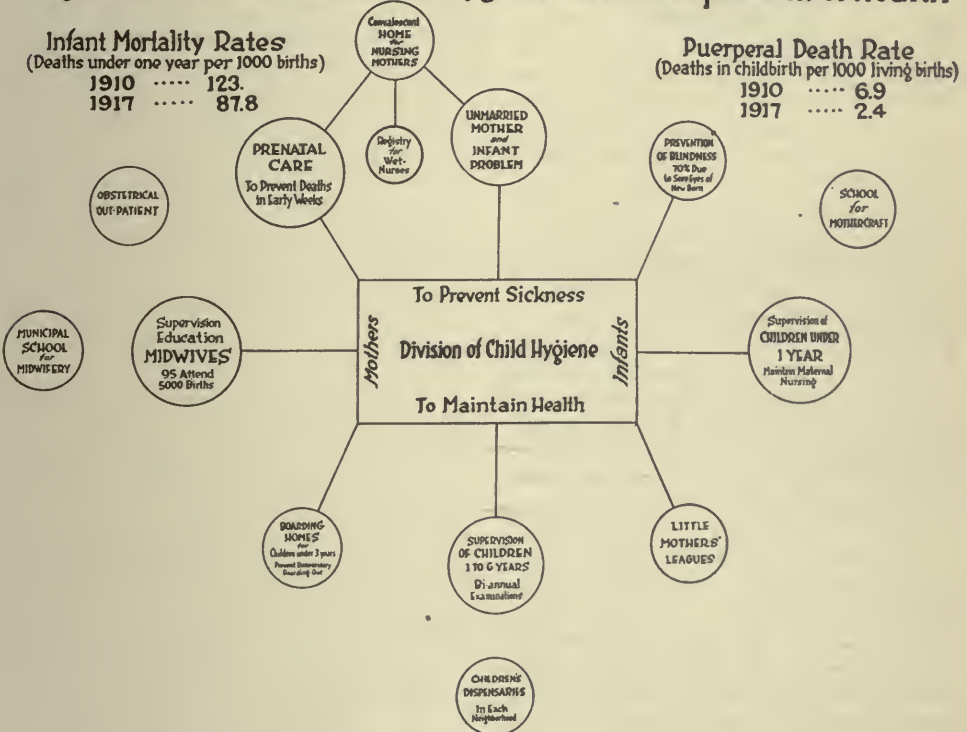
learned that it was not a picture of one of the supervised babies, but of one that had recently moved into the supervised neighborhood from an outside district. Marasmus, atrophy, malnutrition and diarrhoea have practically disappeared from the neighborhoods in which supervision has been maintained.

In 1910 the infant mortality rate per 1,000 births was 123, while in 1917 it was 87, the lowest, next to that of St. Louis, in the

Hill Section, which is our finest residential section. The contrast between these two sections can be summed up, perhaps, by saying that in Ward 1 there are 2.3 persons per room, while in Ward 8 there are probably at least three rooms per person.

It was soon learned that the deaths occurring in the first hours and days of life could be prevented only thru proper prenatal supervision, and this was then established. The mortality in the first month

Organization of Division of Child Hygiene, Newark Department of Health



eleven largest and best-organized cities in the United States. The infant mortality rate among the supervised babies, drawn from the poorest and most congested and most ignorant neighborhoods of the city, was 31.8, if deaths occurring in the first hours and days of life, before the nurse was able to reach the family, are omitted, or 61.4 if these deaths are included. The infant mortality of the first ward, in which the most extensive work has been done and which undoubtedly presents the most difficult problems on account of the very bad housing, social and economic conditions, was the same as that of Ward 8, the Forest

among babies born of mothers who received prenatal supervision was 13.4, while in the city as a whole it was 39.3; the still-birth rate was 7.5, while in the city as a whole it was 38.4. This marked reduction in the early mortality finds its principal value in the assurance that the infants that survived were better born and better cared for after birth.

The realization that many of the diseases and disorders, defects and deformities that are discovered in children thru departments of medical inspection have their beginnings in the pre-school age, prompted the extension of the preventive program to the chil-

dren of pre-school age. First, it is important that work with the pre-school age should be carried on only in those neighborhoods or in those communities in which prenatal and infant supervision has already been well established, as the conditions of malnutrition, rickets, anemia and other disorders and deformities that will be detected in this pre-school age can be prevented by proper prenatal and infant supervision. Secondly, such an arrangement is much more economical, as the nurse who is looking after the expectant mother or the young infant can at the same time instruct the mother and supervise the care of the children of pre-school age. The pre-school age work consists principally in a biannual examination by a physician who gives the mother instructions in general management, feeding and care, and directs her to her family physician or a clinic for any condition that requires medical treatment.

Our educational program is helped considerably by the organization of Little Mothers' Leagues. The field method is followed entirely, assigning to each girl one baby that she is required to visit and report on for a period of approximately six months. In this way she becomes familiar with the problems of infant care and their proper solution, and in addition to carrying this information to her own family and relatives she stores it up for future use.

Supervision of Midwifery

In cities with a large foreign-born population the supervision of midwifery is an essential feature of a complete preventive child hygiene program. The results obtained can be indicated by stating two or three important phases of midwifery work, namely:

1. *Birth registration.*—Registration of births in 1913 showed that the births of 25 per cent of all the babies who died under one year were not reported. In 1917 only 121 births attended by midwives were reported after the five days allowed by law, and only 7 births were unreported. Newark now has at least a 95 per cent birth registration, with midwives delivering over 5,000 of the births, or 50 per cent. It is particularly gratifying to us as supervisors of midwifery, but not as physicians, that this is a better record than that made by the physicians.

2. *Prevention of blindness.*—In 1915,

when the initial investigation was made, it was found that 20 midwives acknowledged that they were not using silver nitrate in the eyes of the new-born. To-day, as far as can be determined from close scrutiny and follow-up work, every midwife is using silver nitrate in the eyes of every new-born infant.

3. *Influence on infant and maternal mortality.*—On account of the frequent charges of high maternal and infant mortality among the midwives, a special study of this question was made for a period of three years, namely, 1914, 1915 and 1916, and the findings were presented before the American Association of Obstetricians and Gynecologists. In 1914 the maternal mortality in Newark was 4.9, or approximately one in every 200 mothers, while in 1917 it was 2.4, or approximately one in every 450 mothers. The infant mortality among babies delivered by midwives was lower than among those delivered by doctors or in hospitals, as follows:

Infant mortality rate of babies delivered:

By midwives	58.9
By physicians	79.4
In hospitals	88.9

Among 500 mothers who were attended by midwives and received prenatal care from this division the maternal death rate was 1.8, which is less than that of the city as a whole.

4. *General results.*—What this division has accomplished with midwives of Newark may be gathered from a comparison of the reports of 1914 and 1917:

In 1914 there were 99 midwives, of whom 17 were practicing without a license; 30 reported births late; 20 frequently failed to report births at all; 13 carried instruments contrary to law, such as uterine forceps, hypodermic syringes, hard rubber catheters, specula; 9 carried drugs, such as laudanum, strychnine, arsenic; 70 admitted that they did not send for a physician when presented with slight abnormalities during pregnancy or labor; 25 midwives did not carry thermometers, but claimed that they were quite competent to determine the temperature by taking the pulse; 13 were suspected of being abortionists.

In 1917 we had 96 practicing midwives instead of 99, of whom two, instead of 17, are unlicensed; two carried drugs forbidden by law, instead of 9; ten did not send for a physician in abnormal cases, instead of 70;

9 did not carry thermometers, instead of 25; and only one carried instruments forbidden by law, instead of 13.

Every puerperal death, every reported case of puerperal sepsis, every case of ophthalmia, is investigated by this division to determine if any blame is to be attached to the midwife, and our supervisor uses these data continually to instruct, advise, and warn the midwives.

The great educational value of our midwives, who enter more than 5,000 homes each year, is being used to the fullest extent. They are learning to teach the mothers in accordance with the principles of infant hygiene that are being established thruout the city.

Prevention of Blindness

Every case of ophthalmia neonatorum reported to the Department of Health is followed up by one of our nurses until the infant is declared cured by the attending physician. In the three years, every case, to our knowledge, with the exception of one, which has a limited vision in one eye, has been entirely cured.

We do not depend only upon the reports of doctors. Our nurses are expected to make a smear of every purulent discharge in the eyes of the new-born infant and send it to the laboratory. In this way 8 cases of gonorrheal ophthalmia and a considerable number of non-specific ophthalmias have been discovered and placed under active treatment. This method makes it possible to urge upon the midwife or doctor attending the case their duty to use silver nitrate and to report all cases of inflamed eyes, and to send for a physician if a regular attending physician is not already in charge.

Results showed that these babies can be cured at home or by combining treatment at home and in the dispensary with proper follow-up supervision to see that treatment is continually given. The records show that 29 cases were treated and cured at home, 9 treated at home and in the dispensary, and only 8 treated in the hospital.

Prevention of Foundlings

This is a new thought in the theory of prevention, but by proper work with unmarried mothers and with proper control of the boarding out of infants and children, the number of children that grow up with-



GOOD PUBLICITY MATERIAL

out parental care or outside of their own home can be considerably reduced.

1. *The unmarried mother problem.*—Supervision of the unmarried mother is maintained from the time she enters the hospital until the infant is one year old, primarily for the purpose of seeing that the infant remains with the mother and is breast-fed. Of 51 cases, 36 mothers with their infants returned to their relatives or parents; 26 infants were kept with their mother at least 1 month, 22 at least 3 months, 15 at least 6 months, and 3 for one year, and of the same number of cases 18 infants have been breast-fed at least one month, 15 at least 2 months, and 11 at least 3 months. At the time of this report only one infant, to our knowledge, had been placed in an institution.

2. *Boarding out of infants.*—The question associated with the boarding out of infants and the conduct of boarding homes is closely allied with the foundling question. Thru an ordinance which requires every person who is taking children under three years of age to board to obtain a license from this department, and thru the co-operation of other agencies, mothers who wish to board out young infants find it necessary to consult us. This has given us an opportunity to prevent more foundlings. Of 246 applicants for boarding homes only 113, or 46 per cent, received addresses of licensed boarding homes, and in the other 133 cases, or 54 per cent, arrangements were made with the mother that would enable her to keep the infant with her.

One of the nurses maintains an active

supervision of the boarding homes, and the feeding and management of the child is carefully safeguarded thru our clinics and one of the physicians, who examines each child before admission to the boarding home and supervises the feeding of the babies in the boarding homes.

The cases are too few to report on the results in regard to sickness and death, but there is no doubt that from present experience the results will be far better than those obtained by sending young infants into hospitals or institutions. This method, furthermore, fixes the financial responsibility upon the parents and protects the municipality and private philanthropy from an unnecessary burden.

A convalescent home has been established in one of the cottages at Ivy Hill, the city's almshouse. This enables us to take better care of expectant mothers and to maintain a directory for wet-nurses.

Social and Economic Factors

When our nurses visit poor families monthly they are confronted with all the social and economic problems that families of limited incomes must face. It is not pretended that all of them can be solved, and therefore special interest is placed in those problems that directly and immediately influence the welfare of the infants and children. The value of this attitude may be illustrated by our reaction to the sugar shortage during the past winter and the milk situation of the past year.

When the nurses reported that the infants and children were not obtaining the necessary sugar in their food, a plan was

arranged, with the consent and help of the Mayor, that guaranteed sufficient sugar for the children at least, and we were instrumental in supplying 150,000 pounds of sugar to some 15,000 families in weekly amounts of one pound. When the increased cost of milk seemed to affect the nutrition of the children, a plan was worked out by the Department of Health and the wholesale and retail milk dealers of the city whereby milk could be supplied at cost, and, if necessary, free of charge.

The nurses are interested in all general family problems, and not only refer them to the proper agent, organization or department, but continue their interest until these problems have been properly dealt with. Prevention by education, by strengthening proper family relations, is the keynote of the work of the Division of Child Hygiene. After all the centuries, it is believed that the best expression of family life is still to be found in the picture of the mother with her infant in her arms—not in the arms of an institution, hospital, governess, milk station or trained nurse.

While it is natural to ascribe the low infant mortality in Newark to the activities of the Child Hygiene Division, it is well to keep in mind that activities of other divisions in the Department of Health and of social agencies have contributed to the general result. The improved milk supply, improved sanitary and housing conditions, clean streets, general education, all affect the welfare of the baby, but, after all, the mother is the whole environment of the baby, and we must look to trained motherhood for the welfare of our infants.

The Birth Certificate

Americans have always been in the habit of being born unostentatiously. Their arrival is a matter of no concern to them that they are conscious of, and their parents have never learned to regard it as a matter of national importance or of legal cognizance. Of course, the parents are thrilled, and the grandparents are delighted, and all the aunts regard the infant as superior to all other infants. But the birth has always been regarded in America as a domestic and not a public event; the police are not

notified; no license for the birth has to be obtained; the incident is not regarded as any of the business of the nation or the state.

As a result of this treatment of births as a concern only of the family favored by the stork, a very large part of Americans could not produce a birth certificate if one were needed to gain admission to the abode of the blessed hereafter. Occasionally this is a great inconvenience in countries where a man is required to get a license to be born and a permit to die.

Cities Preparing for Future Air Traffic

By Howard L. Mingos

PROGRESSIVE municipalities have started work on public landing fields for aircraft. The last year permitted the airplane to demonstrate its usefulness as a peace-time carrier of cargo or persons. Wideawake officials in charge of public interests have therefore been quick to see in the airplane a most important vehicle of transportation, one which will develop in importance as the years pass, a common carrier perfected by the simple process of evolution. These officials know that the airplane has passed the experimental stage. Having vision, they realize that the airplane will be used to the extent of its landing facilities; therefore they are providing it with a base of operations.

It is well that they are doing this, because one has only to look at the towns in which no provisions were made for railroads to learn that the secret of the non-success of these municipalities was a lack of vision and a disregard of railroad needs. When the roads took on the greater part of cross-

country hauling, the towns neglecting to prepare for it found thru-trains whizing by the water-tank and slow freights stopping only long enough to replenish their boiler supply.

Therefore, not to be caught napping, or rather to avoid slumbering undisturbed while cargo and passenger carriers of the future whirr overhead to the nearest town possessing adequate landing facilities and repair shops, progressive municipalities are making ready to receive the commercial airplanes almost before it is ready to whirr often enough and in sufficient numbers to make municipal landing fields a paying proposition. Town councils are coöperating with boards of trade. City councils and commissions are working hand in hand with chambers of commerce, and gradually there is developing thruout the country a great trunk line system of aerial highways with fields obtained by public funds and maintained by municipal organizations anxious to bring the airplane with its crew and



Courtesy Manufacturers Aircraft Association

VIEW OF LOVE FIELD, NEAR DALLAS, TEXAS, ARMY LANDING FIELD FOR AIRPLANES

cargo into their respective towns.

A majority of these fields are laid out according to the specifications outlined by Major-General Charles T. Menoher, Director of the Air Service, last spring, when he selected a few cities as a nucleus for the strategic system of Army Air Service routes. So far final specifications for municipal landing fields have not been adopted; present requirements include only those specifications, set forth by the head of the Army Air Service, which were published in *THE AMERICAN CITY* in July, 1919.

At least twenty-six cities so far have landing fields that answer all requirements, and, what is much more important, fields which may be rearranged or changed so that they will be adequate for the reception, housing, repairing and starting of the countless small airplanes and the corresponding number of large airplanes bound to seek sanctuary within their confines in the years to come.

Those cities which either have leased fields of 600 or more acres or have bought them outright with a view to maintaining adequate landing facilities include Albany, N. Y.; Scranton, Pa.; Flatonia, Tex.; Syracuse, N. Y.; Raleigh, N. C.; Jackson, Mich.; Bristol, Tenn.; Evansville, Ind.; San Antonio, Tex.; New Orleans, La.; Binghamton, N. Y.; Atlanta, Ga.; Kansas City, Mo.; Daytona, Fla.; Macon, Ga.; Cleveland, O.; Tucson, Ariz.; Montgomery, Ala.; Rochester, N. Y.; Baltimore, Md.; Detroit, Mich.

There may be others which have landing fields, but they so far have not signified any intention of equipping these fields as permanent aerial terminals, and therefore are not being counted at a time when part of the problem is to secure the right sort of municipal interest and enthusiasm.

Briefly, a municipal landing field must bear some reference to the main aerial routes. The field must not be located where it might later on be shut in by tall buildings. It must be capable of expansion and must be situated close enough to other transportation facilities and to water-supply to permit any future development found necessary. A municipal field does not necessarily have to be within the city limits.

Widespread Interest Found by Army Pathfinders

The All-American Pathfinders, who were sent out by the Army Air Service August

6 last to investigate landing fields and the sentiment regarding them thruout the country, found some very interesting facts in a majority of cases concerning what the public does not know about the art of flying, its future and its effect on the future of the country.

Major Ora M. Baldinger, commanding the Pathfinders, in his report to the Director of the Air Service, writes:

"At all points visited, keen interest and enthusiasm were manifested not only by commercial organizations but also by the municipalities direct. Each city had made a more or less detailed study of the landing field problem in and about its locality and was only lacking proper guidance in establishing a municipal field.

"It was found that in the choice of fields ignorance was displayed as to the conditions necessary for safe aerodromes. Government specifications, altho detailed, failed to convey the proper demands of the situation. Only personal contact, conversation and actual demonstration could convince and properly present to the lay mind what requirements were actually necessary.

"With scarcely a single exception, the question arose as to the future and feasibility of commercial aeronautics. An intelligent answer presenting the present success and future possibilities of the aerial mail and aeronautics in general was sufficient to clear their minds on this point. However, by convincing them that all future development is directly dependent upon facilities offered at various points, and that the establishment of a landing field is the most important step, the duty of the individual municipality was thus clearly demonstrated."

Need of a Federal Policy

Municipal landing fields await the formation on the part of the Government of a definite aerial policy. Until this policy takes definite shape, cities and towns planning aerial terminals should correspond with the Director of the Air Service, in the matter of location, equipment and initial expense.

This much, however, is assured. The Government must have a fixed policy, and the more quickly this policy is outlined the better it will be for commercial aviation generally and for municipal aviation in particular. For it must be understood by this time that no municipality can, at the present time, chart out a field, make rules and regulations governing it and appropriate the necessary funds to maintain it. Granting that government cooperation is essential, the chief interest of the municipality centers for the present about its aerial police

force, its private aerial carrying companies and accommodations for the planes of private citizens. Even in these the Federal Government and the state must be considered. The postal department, army and navy and many other federal departments arranging their aerial routes will have an interest in every municipal landing field. In peace times the mail service will be the chief government contributing agency. As a matter of fact, the aerial mail service in the years to come will contribute proportionately as much to the municipal landing field as the railway postal service contributes to the privately owned railroad lines to-day. The State National Guard, of course, will be represented at the field. Schools and colleges and private aviation schools will also bring the state into a share of the management.

Municipal ordinances governing such a field should therefore wait upon aerial legislation to be enacted by Congress—uniform legislation, which will serve as a guide to all municipalities alike.

Will the Expense Be Justified?

Will commercial aviation justify this expenditure of public funds? The answer is that it will—just as quickly as the public funds are used wisely and judiciously in making safe landing places and adequate repair stations for the commercial airplane.

The pleasures of flying have never been fully expressed. Each person who flies has a new way of describing his sensations, which are as varied as the topography on which he is permitted to gaze for the first time with an unobstructed view.

With small machines for short hops and multi-motored aerial liners capable of carrying 10 or 15 passengers, such as are now either on the market or in process of final completion, long hauls across many states, and even transcontinental air voyages are not only possibilities but realities and practical facilities which the public must take advantage of if it would save time and comfort.

What of our national defense? We need a great aerial reserve. All other countries on earth have organized separate departments of the air. Under the wise supervision of these air ministries the respective governments are building great networks of aerial highways, linked together by municipal landing fields, to the support of which the governments, municipalities and private interests are contributing.

It would appear that we need such a department of the air in this country in order to facilitate the just progress of the art of flying, and, above all, to insure to our municipalities a fair distribution of the aerial traffic of the future.



UTILITARIAN AND ORNAMENTAL SAFETY URNS ON SHERIDAN ROAD, KENILWORTH, ILL.

The Housing Post-Mortem in the Senate

FREED from the fear of the Hun, Congress has returned to its peace-time proclivities by declaring an open session for investigations of the agencies which it created to win the war.

It is not surprising that government war housing should be among the first to receive attention, for it was long rumored that some shocking things were soon to be published to the world bearing on the practices of the U. S. Housing Corporation.

All of the shock is now contained in a report of the Sub-Committee of the Senate Committee on Public Buildings and Grounds. The report is prefaced by three volumes of testimony. Forty-seven witnesses—tenants, boarding-house keepers, employes of the corporation, and a few others, have made the case from which, by much re-wording and re-statement, the conclusions of the Committee are drawn.

There may have been some inefficiency of administration in the U. S. Housing Corporation. The judgment of its officials may not always have been unerring, particularly when reviewed after the event. The country knows well the conditions under which all governmental war agencies were built up during the pressure of the war emergency. Its concern is not with little mistakes, but it is interested in important issues.

With regard to government war housing, American industrial communities are eager to know what constructive lessons they may learn from the war housing developments, and what is to be the future disposition of the houses erected. Recognizing that but four months intervened from the creation of the U. S. Housing Corporation to the signing of the armistice, there will be no disposition to criticize what was done if these communities are safeguarded from the evils which may result from the improper or ill-advised disposition of the housing properties.

Federal policy in the disposition of its industrial housing properties will have a marked effect upon future housing practice.

Government housing did not satisfy the entire need in American industrial communities. Housing shortage has been

steadily increasing since the signing of the armistice. Those industrial communities in which completed government housing projects await disposition are looking to the Federal Government for some suggestion as to methods of procedure in meeting the present and future housing shortage.

How can housing enterprises be conducted on a business basis to-day?

How can houses be made available to workers on a payment basis that they can afford?

How long a period of amortization should be allowed?

What means may be employed to stimulate new construction and encourage home ownership?

Should all houses be sold outright or should coöperative ownership be tried?

What is the best maintenance practice?

What are the proper standards of housing for workers in industrial cities and towns?

The answer of the Senate Investigating Committee to these and other questions of policy is found in the recommendation to abolish the U. S. Housing Corporation and sell its properties on the basis of present-day valuations wherever possible.

To this same Senate Committee on Public Buildings and Grounds may be referred in due time a bill now before the House to create in the Department of Labor a Bureau of Housing and Living Conditions. It is proposed that the valuable information obtained by the U. S. Housing Corporation be carefully analyzed and supplemented and made available thru this Bureau in usable form to intending builders. A Federal Housing Bureau would be qualified, as no agency is now, to meet the growing housing shortage with constructive measures of relief; to develop new plans for financing housing as a safe investment; to stimulate good building and give advice and aid upon local request on the most practical methods of increasing housing facilities.

The Tinkham Bill, now under consideration in the House, offers a promise of real Federal assistance. Should this or a similar bill reach the Senate Committee on Public Buildings and Grounds, it is desirable that it be given impartial and more constructive consideration than is apparent in the Committee's investigation on government war housing activities.

Economical City Pavements

With Particular Reference to Conditions in the Southwest

By A. P. Learned

Consulting Engineer, Black & Veatch, Kansas City, Mo.

WE pave our streets to increase transportation facilities, to better sanitary conditions and to improve the appearance of our cities; that is, we pave for commercial, sanitary and esthetic reasons. The choice of pavement should be based on its cost, which includes first cost and maintenance, on its value for transportation as influenced by tractive resistance, slipperiness or climatic conditions that may affect its usefulness, or its sanitary qualifications and its general appearance. Affecting the item of maintenance is durability, which has a vital influence upon one's selection because of the public objection to continued maintenance—or to a road's being in such condition that it needs to be repaired.

Before selecting the pavement, or at least before it is built, it is quite necessary to determine the width of the pavement to build—and then is town pride put to the

test. It becomes a necessity to advise the well-meaning citizen who would pave the business district 80 feet wide if there is room, and the residence district 40 to 50 feet wide, that the traffic which passes down New York's famous Fifth Avenue, passes down a street 75 feet between curbs. Further, he must be made to realize that when the width is not too small, yardage in length rather than in width will be of the most benefit to the city as a whole and will not result in excessive cost to the property owner.

A great number of conditions enter into the selection of the width: for instance, whether it is the intention to park on the side or the middle of the street; whether the street is one of heavy or light traffic; and whether the proposed width will fit in with the general scheme of the street. It is quite a common practice thruout the mid-



FOURTH AVENUE, GARNETT, KANS., SHOWING CENTER GRASS PLOT AND CONCRETE CURBS

dle and southwestern sections of the United States to build the pavement just as wide as possible, allowing 12 to 16 feet for sidewalks in the business district, and to build strictly residence streets 25 to 30 feet wide. A width less than 25 feet proves too narrow, and one more than 30 unnecessarily great. In this connection, with motor traffic it has been found necessary to figure travel widths of a vehicle from 8 to 11 feet instead of 6 to 8 feet as heretofore, and to figure the width of the street in multiples of this width; for instance, if we figure the street for three vehicles at 9 feet clearance, the width will be 27 feet. The curbs at street intersections need to be of long radii to furnish the space for turning around in narrow streets, and to facilitate the turning of corners by rapidly moving vehicles without running out into the street.

The next problem is to determine what kind of pavement should be selected. There are four kinds of truly hard-surfaced pavements to be considered, namely, concrete, asphaltic concrete, sheet asphalt, and brick. Wood blocks and pavements of that class are not included, because conditions, both traffic and financial, do not usually warrant their consideration in modern-sized southwestern cities.

Concrete

There are two types of concrete pavements, namely, one-course and two-course pavements. In the Southwest there is not a large amount of concrete pavement, and some reticence is shown towards building it. We find, however, in the states of Michigan and Wisconsin a considerable amount of this character of pavement, which seems natural, for in that section of the country the aggregate available is satisfactory for wearing surface. One of the serious difficulties in laying concrete pavement in the southwestern section of the United States is the securing of proper aggregate for the wearing surface. In the single-course concrete the aggregate is necessarily the same thruout, while in the two-course concrete the aggregate in the wearing course may be entirely different from that in the base course. It is better practice to use the local material for the first course if possible, and to import a proper aggregate for the wearing course, such as crushed Joplin flint or an equally good material, Wisconsin granite. The shipment of this material for

the total thickness of the pavement would make it excessively expensive. There is no reason why the two-course pavement will not afford a first-class pavement if properly built with reinforcement between the courses and adequate expansion.

One of the arguments against concrete pavement in the past has been its noisiness, its slipperiness and its hardness, but with the increased use of motor-driven vehicles these objections are set aside.

Concrete pavements, or at least the present type of cement concrete pavements, are of recent origin. We find that in 1879 there was constructed in Scotland a concrete pavement that proved to be very satisfactory for a short time; but when it started to wear, it disintegrated very rapidly. We are not acquainted with the conditions under which this pavement was constructed, and there may have been some local reasons for its rapid deterioration.

The first concrete pavements in this country were built in 1894, but did not obtain any particular popularity or general consideration until 1909, when the construction of a considerable amount of this pavement was undertaken by Wayne County, Mich. The uniformly satisfactory results in that section led to a considerable discussion, and, we may say, popularized this pavement, so that up to the first of 1917 one hundred and fifty times as much concrete pavement was laid as there had been previous to 1909.

Asphaltic Concrete and Sheet Asphalt

Asphaltic concrete and sheet asphalt furnish the smoothest surface, and probably embody, when first constructed, more of the requirements of an ideal pavement in so far as sanitation and resistance to traffic are concerned than any other kind. Sheet asphalt, which is a pavement built up of a base, a binder course and a wearing course, was first built in a somewhat modified form in 1877, in Washington, D. C., on Pennsylvania Avenue; this is at least the first well-known installation. This type of pavement had for a number of years a very extensive and high popularity, but a little later, when cities of small size saw fit to pave, there was developed a pavement that could be built for considerably less money than the sheet asphalt and which provided in many respects the characteristics of sheet asphalt, namely, asphaltic concrete.

Asphaltic concrete is a bituminous concrete pavement having a predetermined mechanical graded aggregate composed of broken stone, gravel, sand and finely ground inert materials, and is the outgrowth of a pavement known as the Excelsior pavement, which was advertised as early as 1871, tho of its installation we have no record. Asphaltic concrete, as we know it in the Southwest, has been built largely under or with modifications of the Topeka specifications. This pavement, as ordinarily built, consists of a 2-inch course of bituminous concrete aggregate on a concrete base. The sheet asphalt ordinarily consists of a 1½-inch binder course and a 1½-inch wearing course rolled to 2½ inches in thickness.

Certain requirements are essential to the securing of a satisfactory piece of work with both sheet asphalt and asphaltic concrete. The proper rolling of the surface to thoroly compact it and to get it smooth so that water will not stay on the surface, resulting in the rotting of the asphalt because of chemical changes, is essential in both cases. It is necessary that there should not be too much asphalt in this material, for an excess tends to soften it so that the street becomes wavy, or it works down into the gutter. If too small a quantity of bitumen is used, the pavement will look dry and lack the proper elasticity. Within the last few years a condition that has not yet been satisfactorily solved, and is a problem of concern, has come up, namely: what will be the influence of the oils that drip from automobiles and are sprayed out of the exhaust of automobile engines, and will it not be necessary, if this has an effect, to determine the effect on different streets due to the difference in intensity of traffic on this type of pavement?

Brick Pavements

Brick pavement as now built in Kansas is generally a fiber brick, so-called, laid on a sand cushion with a concrete base and an asphalt filler. There are also a number of stretches of so-called monolithic brick in which the filler is of cement grout and the brick has been laid directly upon the base when it is still green so as to make the pavement monolithic. Fiber brick have been used five years in this territory. Experience with brick materials is much older, however, and durability can be determined

by the rattler tests. There has been an argument against brick pavements that they were hard and noisy, but the use of an asphalt filler and the change from horses to motor-drawn traffic has removed the cause for a large part of these arguments.

Comparisons of Different Types

It is only fair to say that the life of the four pavements under consideration is somewhat a matter of conjecture. As one studies the general experience thruout the country, he will notice that in certain cities one type of pavement gives absolute satisfaction, while in other cities pavement of the same type is entirely unsatisfactory. Again, it is found that the conditions which recommend a pavement to one individual condemn it to another. For instance, a number of people think that asphalt pavement should not be used where the traffic is quite heavy, because it softens in warm weather and will be cut up, while others believe that the life of pavement of that character is materially lengthened by the kneading and working that traffic gives it.

A pavement built of high-grade material has a very different life from that of one of slip-shod construction. For instance, take the brick industry. Several years ago it was quite the custom to have brick plants in a number of cities furnishing brick for these respective cities, and each plant so arranged the situation that only its brick was considered in the city in which it was located, and a large number of these plants were producing a brick not suitable for paving. This has resulted in considerable criticism of this type of pavement that is truly unfair when applied to the present products. The same might be said of the other types of pavement up to the time of their general standardization, altho it must be confessed that previous to that time very high types of pavement had been built in different places.

An Analysis of Labor Costs

The general cost, and particularly the first cost, have a vital bearing upon the selection of pavement, and it is quite important that this point be considered in its true light. In an analysis of the cost of the construction of brick pavement previous to the present increase of prices, after the material was on the ground the labor cost for the paving was approximately 20 per cent of the total

amount, but the author finds that altho labor is being paid approximately 100 per cent more than it was previous to war-time conditions, the labor item has increased 250 per cent. This is due to the decreased efficiency of common labor occasioned by the tremendous demand, and a general attitude of getting the pay and not necessarily delivering the required work. In the case of brick pavements the labor item thus becomes 25 per cent of the present cost. Since the brick itself has increased approximately 65 per cent in price, and cement nearly 100 per cent, the present price is necessarily almost double the pre-war price.

The greater increase in the case of concrete and asphaltic concrete is largely because the proportionate part which labor plays in the cost of the work is somewhat higher. These products cost nearly twice what they formerly did. For instance, in the case of asphaltic concrete the labor item, which formerly amounted to 22 per cent of the total, now amounts to nearly 33 per cent. The present price of brick pavements in Kansas ranges from \$3.40 to \$4.00, depending on local conditions. The cost of asphaltic concrete pavement is approximately 90 cents per yard less, and the cost of two-course concrete pavement is approximately 40 cents less than that of brick pavement under similar circumstances. The price of brick pavement previous to the increase was close to \$2 a yard, and it will be noted that compared with 194 per cent. the average increase of prices from 1914 to December, 1918, on all commodities, the price of paving is not out of line. In a comparison of these various types of pavement one should consider that in sheet asphalt the material on top of the base is $2\frac{1}{2}$ -inch, the material in brick pavement is 3-inch, and in concrete and asphaltic concrete 2-inch; therefore the difference in price has a reasonable basis.

Present Costs Do Not Make Paving a Luxury

To purchase pavement at this time is not purchasing a luxury at a luxurious price, but is purchasing a utility at a price not out of line with the present purchasing power of a dollar in other industries. The popularity of street improvements is more noticeable at the present time than it has been for a number of years. For instance, there is over 50 per cent more yardage of

brick pavement this year than in any year previous, amounting to nearly 1,500,000 square yards. The demand for improved streets and roads is the result of the change in our general transportation system from animal-drawn to motor-driven power and to our increasing population.

Methods of Financing Paving

Recognizing the fact that cities are having these improvements, that the prices are not prohibitive, and that the community can afford it, they are confronted with the question of the proper legal procedure to procure such improvements.

This discussion has been confined largely to cities of the second and third class, which are permitted to construct improvements of this character by petition of 50 per cent of the resident property owners on the street, or by resolution of the council, if they deem it necessary for the general well-being of the community, provided said resolution is not protested by at least 50 per cent of the resident property owners on the streets affected.

After this petition has been accepted or the resolution has been properly advertised and not successfully protested, the city can let contracts for the work. To pay for paving, the law provides that general improvement bonds may be issued chargeable against the city as a whole, to pay for all intersections of streets and alleys and for the bringing of streets to grade, and that special improvement bonds may be issued to pay for that which is taxed directly to the property owners affected. The law also provides that these bonds may be issued for either ten or twenty years, provision being that the twenty-year bonds shall not exceed $5\frac{1}{2}$ per cent and the ten-year bonds 6 per cent, and that these bonds may be paid off in equal annual installments. It is, of course, good practice, if the pavement is of such a character that it will not last more than ten years, to make these bonds of such a term that they will have been paid off before the pavement begins to deteriorate seriously. Kansas law provides that a city may be indebted up to 15 per cent of its valuation, and this necessarily gives to its municipalities means of providing for themselves.

ACKNOWLEDGMENT.—From a paper read before the recent convention of the Kansas League of Municipalities.

Jamestown's Municipally Owned Public Utilities Show Substantial Savings to Public and Profit to City

By Samuel A. Carlson

Mayor, Jamestown, N. Y.

THE city of Jamestown, N. Y., furnishes to its inhabitants, thru municipal channels, light, water, market, hospital and sanitary service, paying and sewer construction at rates less than those charged by private corporations for similar service in other cities. There has been developed a civic spirit which places emphasis upon the value received in public service and which has rejected the short-sighted policy of turning every public utility over to private ownership for fear that public ownership might involve a public debt.

For years private interests have conducted a propaganda by which the public mind in most cities has been taught to believe that anything undertaken by the municipality for the public good would mean a tax burden upon the citizens. Few persons seem to realize that every time a street car fare is paid or an electric bill is paid to a private corporation, it means just that much paid in taxes into private channels instead of into public channels. In the end the whole community pays not only the indebtedness of the private corporations, but dividends on stock which is often inflated. If the average citizen dwelling in the city in which public service utilities are privately owned will undertake to compute the amount of his contribution for service received, he will find that his burdens are far greater than the tax outlays in cities where the opposite policy is pursued.

When it was first proposed to municipalize the lighting system in Jamestown twenty-five years ago, there went up a great hue and cry from corporation sources about "tax burdens," "waste of public money," "socialistic experiments," etc., but the city has proved the unsoundness of these predictions.

Electric Plant Almost Wholly Paid For

The city now has a municipal electric plant valued at half a million dollars with an indebtedness against the plant of less

than sixty thousand dollars. The assets of the plant have been entirely from the profits realized from the commercial sales of electric current to the citizens. Not a single dollar has been levied in taxes to pay for the plant or its operation. The income from this source has paid all operating expenses, all interest on bonds, all repairs and replacements, and all necessary extensions to the plant from time to time, besides leaving a surplus (after deducting 5 per cent for depreciation) with which annual payments on bonds have been made.

The city has been able to do this after having made rates far below those paid by consumers of current in cities supplied by privately owned plants. Our prevailing rate is 4 cents per k. w. hour, notwithstanding the excessive price paid for coal from which its power for current is produced. Not only has the city plant been able to return to its citizens the increased values of a municipal utility nearly paid for, but it has saved to the people nearly two million dollars as a result of low rates for electric current. The average home owner is able to light his home at a cost of \$1 per month.

The city has succeeded in rendering this service even in the face of keen competition from the Jamestown Street Railway Company, which under its franchise is authorized to carry on the business of commercial lighting. If this mistaken policy of duplicate service had not been sanctioned by the city, there would have been much greater revenue and gain to the people than is now the case. The municipal plant has forced the private company to sell within the city limits at the same price as charged by the city, altho outside of the city, where there is no municipal competition, the private company charges 12 cents per k. w. The municipality has continued its low rates, while private corporations have continually demanded increases. Various disinterested experts have made repeated examinations into the affairs of the municipal lighting

operations, and in every instance the reports have reflected credit upon the city's management.

The City's Other Profitable Undertakings

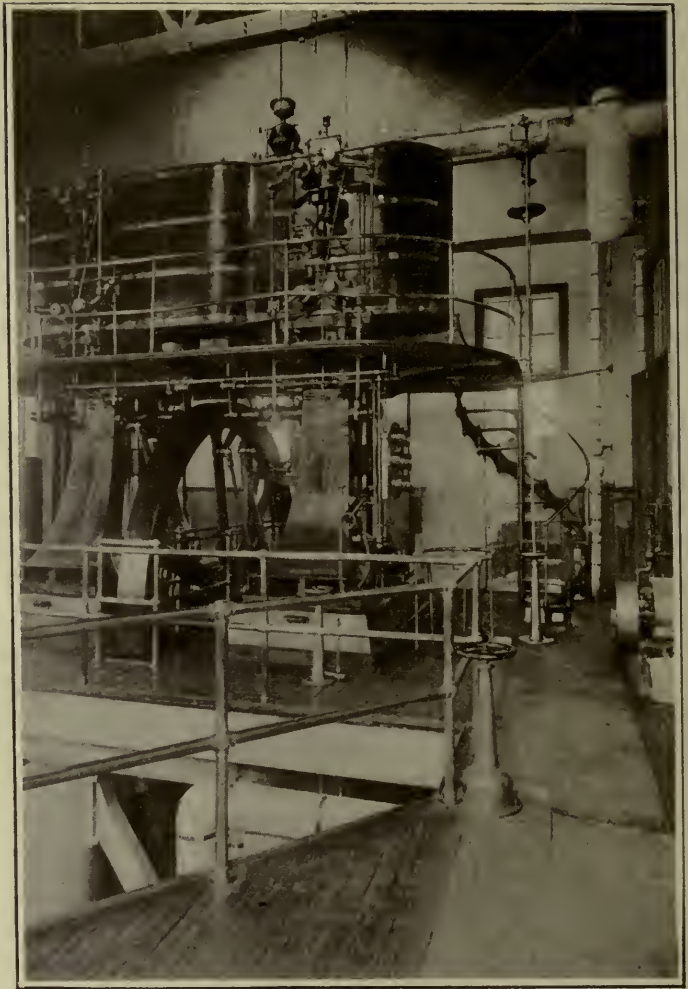
Jamestown has a water plant valued at one and a half million dollars, with a bonded debt of \$450,000. The difference between assets and debt represents gains to the community obtained without taxation and entirely from revenues derived from water rentals, which were reduced 60 per cent after the acquisition of the plant from the private company.

The city also owns and operates a public market which is valued at \$25,000, and was wholly paid for from the revenues derived in rentals from stalls used by market dealers. The public market has had the effect of stabilizing prices. Jamestown also maintains a public hospital valued at \$200,000, against which there is an indebtedness of only \$80,000.

All the paving operations in the city are conducted directly by the municipality, with the result that the profits which formerly went into the pockets of contractors now remain in the pockets of the abutting property owners, whose assessments for paving and sewer improvements have been reduced by this method more than 33 per cent.

All the garbage within the city is wrapped by each housekeeper in paper bundles after having been drained in the kitchen sink, and is taken by means of a collecting wagon owned by the city to a piggery located in the outlying district.

It is now planned to have the city assume the control of the entire milk supply by erecting a central plant to which all milk



ENGINE ROOM OF PUMPING STATION, JAMESTOWN, N. Y.

would be taken from the producer and from which, after a scientific test, it would be distributed in a sanitary manner and at cost to all consumers in the city.

Continuity of Service Insures Experienced Men

The secret of Jamestown's success in its many municipal activities lies in this fact: the various public utilities are under the control of Boards of Commissioners composed of public-spirited men, trained in business affairs or expert in mechanical lines, reappointed continuously by the Mayor, who is himself a member of each Board of Commissioners, and who has been reelected Mayor for six successive two-year terms. This continuity of service gives

the people the benefit of extended experience in public affairs, which is just as imperative in the management of a city as it is in the management of a large business corporation.

In selecting men to administer the different utilities the Mayor has followed the principle of proportional representation by giving to each leading group of citizens a representative on each of the Water, Light, Hospital, Health and Improvement Boards, with the result that the labor, business and professional elements have equal voice in controlling the important administrative branches of the municipality.

Viscount Bryce in "The American Commonwealth" pointed out that the frequent changes in the personnel of municipal administrations produced inefficiency and undemocratic results in many of our American cities. To be governed properly a city must have experienced men. Such men cannot be had unless there is adequate compensation and a tenure of office long enough to permit proper training in dealing with the business and human problems which enter into public service.

This has been the plan which has made

Jamestown one of the best-governed cities on the American continent, with a total per capita annual expense of less than \$14 for all purposes, including schools. The City Administration has aimed not so much at a low tax rate—because a low tax rate often means neglect of public health and a laxity in needed improvements—but to secure for its citizenship the greatest values in public service and in elevating the civic life of the community.

Municipal Plants Yield Profit to City

The combined receipts from the Water and Light Departments and the Public Market and Hospital last year were \$295,009.05. The combined expenditures, including interest on bonds, were \$206,415.76, leaving a net total annual gain to the municipality of \$88,593.29, and this, it must be remembered, is in addition to the gain to the citizens in reduced rates for public service.

Jamestown has long since passed the experimental stage in public ownership, and is prepared to enter upon an extension along other lines in the field of municipal activities as soon as charter and constitutional restraints and limitations can be removed.

The Problem of the Foreign-Language Newspaper

By Fred C. Butler

Federal Director of Americanization

THERE are those who loudly demand the abolition of everything published in any language they cannot understand. Either they are the chauvinists or hyper-patriots—those who would form another "Know-Nothing" party holding the fruits of America only for those who were accidentally fortunate enough to be born here—or they are those who think everything must be worthless or harmful which they themselves do not understand.

I hold no brief for the foreign-language press of America, but I would oppose as best I can its abolition. On the other hand, I sincerely hope that the day will soon come when it will no longer be necessary to publish books, magazines and newspapers in any

language other than the language of this land. At the present time such publications are necessary if we are to have the means of carrying the truth to eyes that are blinded and ears that are deaf.

We have too long left the Americanization of our foreign-born to happy chance. We have opened the doors to our national warehouses and permitted all to enter who would. We have trusted to blind fortune to see that these newcomers absorbed what was good in our national life and cast out that which was bad. We have known that the forces of evil were carrying out definite programs for the sowing of their seeds. We have known that these seeds were germinating and that weeds of hate and distrust

and unrest were growing. But we have been too busy with our own petty affairs of life to lend a hand. We have fatuously assumed that "truth crushed to earth would rise again."

We have but one door into the minds of millions of our fellows, and that is the language of their birth. We must continue to use this door until a new one can be opened. This new door the nation has never made any definite effort to open. To close the old before opening the new would on the face of it be "cutting off the nose to spite the face."

Abolition of the foreign-language press is idle talk. Our task is rather the abolition of the special need for it. Toward that end there should be a concerted and definite movement, with the nation, the states and the communities working hand in hand.

Whether there should be a law compelling the publication in parallel columns of an English translation in all papers published in foreign languages I do not care to hazard an opinion. I do not like the implicated thought that all foreign-language papers are publishing matter which is harmful to the nation. I know that such is not the case. In my own office we translate each week hundreds of the foreign-language papers and we seldom find anything which is worse than or even as bad as much that is openly published in the English tongue by scores of rabid, radical organs which exist by playing upon the passions of men and fanning them into a white heat over injustice, actual or imagined.

Bolshevism and all the other "isms" which attack society from time to time are the natural fruit of injustice and ignorance. I am sincerely hoping that we as a people will soon return to our usual rules of fair play and an open mind and that we will not thru hasty and ill-considered legislation destroy the confidence of those whose co-operation we must have if we are to reach the millions whom they represent. For in the elimination of injustice and ignorance we must have the cordial and active support of our foreign-language press.

Except for the mistrust which it implies, I see no objection to the requirement for bilingual publications. As a matter of fact, it seems to me that it would be the part of wisdom for the publishers of newspapers in foreign languages gradually to transform

their publications into the English language. The nation will not much longer tolerate the existence of huge masses of people who cannot understand the rest of us and whom the rest of us cannot understand. I do not mean by this that there will be compulsory teaching of English and the forced abolition of foreign languages, but I do mean that we will soon see our duty so clearly that we will undertake it like men. We will proceed upon a definite, practical, well-thought-out program to make classes for the study of English by adults so easily available that whosoever will may learn. We will then, thru the foreign-language press and the racial societies, build up a sentiment for the learning of English among immigrants just as we built up a desire to wear a Liberty Bond button. Within a decade illiteracy in the language of our land can be made a thing of the past.

We have had pastors of foreign-speaking churches who were so short-sighted as to oppose the use of the English language by their people. They thought by so doing that they were maintaining the solidarity of their congregations and setting up obstacles against their drifting to other churches or creeds. As a matter of fact, they are beginning to find they were sowing the seeds of their own destruction, for it is those undigested masses that are making an exodus and returning to the lands of their birth. As a consequence, this department is receiving frantic appeals from many such pastors to come at once to assist them in making Americans of those whom in the past they have tried to keep as foreigners.

Exactly the same situation faces the publisher of a foreign-language newspaper. If he has endeavored to keep his readers Germans, or Italians, or Poles, or what-not, he is finding a high mortality in his subscription list. If he has encouraged Americanization, his readers are not those who are standing in line before our outward-bound steamship offices.

And so I say that common business foresight and prudence should lead the owner of foreign-language publications gradually to transform his people into an English-reading one, and to commence at once thru the printing of part of his paper in English to keep the custom of those who will from this time on, in increasingly greater numbers, learn to read the English language.

Chicago Moves Toward Non-Partisanship

By Dwight L. Akers

Acting Civic Secretary, City Club of Chicago

THE decks are being cleared in Chicago for the first political battle under the new aldermanic election law passed by the State Legislature last spring and approved by the Chicago voters in November. The election to be held February 24 will afford the first try-out of this law. The law provides for nomination by petition, a non-partisan ballot and majority elections, with certain incidental improvements in election technique. It is the hope of the framers of the law that it will not only simplify and improve election methods and reduce election costs but in some measure also untie the city government from the leading strings of partisan organizations and factions.

The new election law was passed only after many years of effort, during which a considerable body of voters had been won over to the principle of non-partisanship in local elections. Since 1896 the Municipal Voters League has been impartially reviewing the records of candidates for the City Council, has been making non-partisan endorsements, and by persistent effort along these lines has helped to promote among the electorate the habit of voting for fit candidates, irrespective of national party allegiance. The League also brought about and has been able to maintain, year after year, in the face of political opposition, a non-partisan organization of the City Council and its committees. There have also been in Chicago sporadic, and occasionally successful, citizens' movements to elect aldermanic candidates, running without party support on a "non-partisan" platform.

The idea of non-partisanship in voting at local elections is therefore not new to Chicago voters. The aldermanic election law ratified last November, however, is the first recognition of this principle in law in Chicago. It provides a definite method of election without the aid of party machinery and without party designations upon the ballot.

The outstanding features of the new election law are as follows:

1. It applies only to aldermen. The Mayor, the City Clerk and the City Treasurer were exempted from its provisions by a compromise which was made to insure the passage of the bill. It is hoped that a successful demonstration of the law in aldermanic elections will result in subsequent legislation bringing these officials under the new system.

2. It provides for nomination by petition instead of by party primaries as heretofore. Petitions must contain the names of not less than 2 per cent and of not more than 5 per cent of the voters of the ward voting at the last aldermanic election.

3. Candidates receiving a majority vote at the election are declared elected. If no candidate should receive a majority vote, however, the two candidates receiving the greatest number of votes, respectively, stand for a supplementary election. Majority elections are therefore insured, and at the same time worthwhile economies will undoubtedly be effected in many wards by the elimination of one election.

4. There will be no party columns, circles or other designations on the ballot. The names of candidates are to be rotated by precincts so that each name will appear at the top of the ballot in an equal number of precincts.

It was no small accomplishment for the framers of this legislation to break thru the adverse psychology of a State Legislature elected on partisan lines, and to obtain the passage of the bill, for similar bills had received scant consideration at previous sessions of the Legislature.

An argument for the non-partisan election law which was probably more persuasive with the Legislature than the abstract principle of non-partisanship was the fact that heavy economies in election costs could be realized thru the proposed change in method. This was the more compelling because the city of Chicago was facing a severe financial stringency and was making desperate appeals to the Legislature for authority to increase local tax rates. It was estimated that the non-partisan election law would save the city, chiefly thru the elimination of certain registrations and primary elections, about \$200,000 a year, except in years when the election of other officials required the holding of primaries.

It is still too early to make predictions as

to the effect of the law in encouraging desirable new candidates. The framers of the law hope that it will have this effect. Some of the present aldermen have already started the preparation of petitions and are taking advantage of the law to obtain signatures irrespective of party affiliations. It is, of course, not expected that organization support will be shunned by candidates, or that such support will not be, as heretofore, a big factor in the election. However, the friends of this legislation believe that it constitutes an important entering wedge and that it will in time have important results in reducing the influence of partisan and factional politics in the government of the city.

The new law had the combined backing of the civic organizations of Chicago and also of the City Council. It had its origin in the councils of a "conference committee

of civic organizations."

A companion measure, the so-called "Fifty-Ward Bill," also promoted by the citizens' "Conference Committee" and passed by the Legislature, was lost at the referendum in November by a small margin, primarily thru the energetic opposition of the Thompson city administration and of certain aldermen who saw their political future imperilled by its provisions. The law provided for a reduction in the size of the City Council from seventy to fifty members, created machinery and established standards for the redistricting of the city and provided for further important economies in the election system. The fifty-ward law, tho defeated at this election, may be resubmitted at any future election, and, in view of the small margin which brought about its defeat, it is the hope of its advocates that it will later be adopted.

Lawns and Flowers Instead of Cluttered Back Yards



APARTMENTS WITH REAR GARDENS IN FOREST HILLS, MASS.

Assessed Valuation, Per Cent of True Value, Tax Levies, and Tax Rates of Wisconsin Cities, 1919

By the Municipal Reference Bureau
University Extension Division, University of Wisconsin

THESE figures were compiled by the Bureau from official records on file at the Wisconsin Tax Commission, and are submitted for the purpose of comparison in connection with the preparation of city budgets.

The figures for the assessed valuation, for the total, general, and school tax levies, and for the special assessments, are taken from the reports of the county clerks to the Tax Commission, as corrected by the Commission from the reports of the local assessors. The figures for the income tax are taken from the county treasurers' income tax settlement receipts filed with the Tax Commission. Those showing the ratio of assessed to true value are taken from the reports of the county assessors of income and are for all property, real and personal. The tax rates were computed by the Bureau by dividing the total tax levy by the assessed valuation. They are given in mills and include the rate for state and county taxes.

The assessed valuation is that of May, 1918, and is the valuation used as the basis for the levy of taxes collected in January, 1919.

Under the heading "Total General Taxes" are included the state, county, and city taxes, including the school taxes, but not the income taxes, special assessments, or delinquent taxes. The school and income taxes and the total special assessments are shown in the columns under those headings, respectively. In the column headed "General City Taxes" are shown the taxes levied for the general city government and its various departments, exclusive of the schools.

The amounts shown in the column headed "Income Taxes" are the total income taxes levied, not the amount of revenue derived by the city from income taxes. They include the offsets from personal property taxes and the amounts due the state and the county. The amount of revenue actually received by the city in each case would be very much less. Under the law as amended by the Legislature of 1917, after deducting the personal property tax offsets, 10 per cent goes to the state, 20 per cent to the county, and the remaining 70 per cent to the city.

There being no state census, the population figures shown are those of the federal census of 1910, the latest accurate figures.

City	Population 1910	Assessed Valuation	Per Cent. of True Value	Total General Taxes	General City Taxes	School Taxes	Special Assess- ments	Income Taxes	Tax Rate (Mills)
Appleton	16,773	21,203,693	96.0	480,267	197,774	145,728	18,023	183,502	22.3
Ashtland	11,594	7,752,065	91.6	232,561	81,307	92,731	4,381	67,365	30.0
Beloit	16,125	17,278,937	82.9	349,119	100,826	182,771	56,841	157,735	20.2
Eau Claire	18,310	13,810,513	80.3	397,253	103,376	131,425	30,720	128,533	28.8
Fond du Lac	18,797	18,415,172	95.0	388,772	202,213	117,164	26,138	102,615	21.1
Green Bay	25,236	33,780,705	103.5	643,885	302,669	184,487	22,315	198,575	19.1
Janesville	13,894	16,865,260	92.7	290,936	138,912	97,427	5,351	79,214	17.3
Kenosha	21,371	40,600,995	98.2	812,271	373,622	264,574	74,979	712,391	20.0
La Crosse	30,417	29,634,821	95.2	711,235	482,393	28,212	14,196	180,742	24.0
Madison	25,531	73,081,612	102.9	984,700	473,064	325,096	133,045	230,181	13.5
Manitowoc	13,027	19,988,306	100.0	382,620	233,298	104,329	10,991	138,293	19.1
Marinette	14,610	9,802,907	95.7	286,430	167,084	73,953	6,339	69,855	29.1
Milwaukee	373,857	574,020,559	91.6	11,581,212	6,086,270	2,986,098	708,921	3,774,929	20.2
Oshkosh	33,062	35,410,880	91.7	690,564	353,459	195,811	39,987	168,163	19.5
Racine	38,002	57,812,263	85.9	1,101,494	356,686	401,333	130,480	521,785	19.1
Sheboygan	26,398	24,669,300	81.4	629,492	265,096	253,680	38,134	184,420	25.2
Superior	40,384	31,930,163	71.4	1,057,678	259,687	428,519	100,643	259,426	30.3
Wausau	19,560	10,719,754	55.0	375,191	177,466	127,452	10,369	87,924	35.0

TAX DATA OF WISCONSIN CITIES OF OVER 10,000 POPULATION

City	Population 1910	Assessed Valuation	Per cent. of True Value	Total General Taxes	General City Taxes	School Taxes	Special Assessments	Income Taxes	Tax Rate (Mills)
Antigo	7,196	5,519,030	87.0	187,647	83,060	62,725	4,483	13,437	34.0
Baraboo	6,324	5,272,874	90.5	111,744	45,712	41,890	3,368	21,682	21.2
Beaver Dam	6,758	7,271,323	88.8	116,341	52,442	43,738	6,597	53,029	16.0
Chippewa Falls ..	8,893	6,695,381	90.4	150,652	72,376	52,415	4,126	31,118	22.5
Grand Rapids ...	6,521	6,686,884	86.2	187,232	76,153	77,919	4,473	46,428	28.0
Marshfield	5,783	4,741,529	81.2	148,404	84,627	38,807	3,126	25,636	31.3
Monasha	6,081	6,338,150	107.0	107,748	42,600	43,482	4,977	45,608	17.0
Menomonie	5,036	4,436,490	82.3	100,736	35,066	47,853	2,209	14,651	22.7
Merrill	6,689	7,039,020	116.8	158,231	79,036	40,000	781	48,732	22.5
Neenah	5,734	7,858,615	98.9	146,430	67,387	49,950	2,452	55,840	18.6
Oconto	5,629	3,235,525	92.2	97,065	51,723	22,460	5,191	19,412	30.0
Portage	5,440	4,668,432	90.6	140,052	82,544	34,336	9,248	15,019	30.0
Rhineland	5,637	6,063,331	91.3	167,346	92,318	6,547	80	79,302	27.6
So. Milwaukee ..	6,092	6,580,992	89.7	164,527	95,551	39,679	34,808	82,168	25.0
Stevens Point	8,692	5,538,032	82.1	203,399	104,280	70,564	4,709	18,635	36.7
Watertown	8,829	9,671,269	86.1	167,231	93,780	41,566	7,789	44,221	17.3
Waukesha	8,740	10,405,366	93.5	240,468	105,204	81,086	9,962	84,707	23.1
West Allis	6,645	21,878,210	85.0	332,475	139,791	89,545	67,225	276,441	15.2

TAX DATA OF WISCONSIN CITIES OF BETWEEN 5,000 AND 10,000 POPULATION

Comparison with other cities is always valuable in municipal budget making. The figures shown in this report will enable the members of finance committees to make reliable comparisons of the actual levies for various purposes made in the different cities. In a comparison of tax rates, however, care should be used. The tax rates here shown include state and county rates and are based on the assessed valuations. For accurate comparisons these rates should be reduced to the "true" rates based on the true valuation. These can easily be found from the data given. By dividing the assessed valuation by the ratio of assessment or per cent of true value the true valuation may be found. By dividing the total

general tax levy by the true valuation thus found, the true tax rate may be ascertained and the tax rates of the various cities compared on the basis of the true valuation. Except in the cases of cities where there is a great difference in the rates at which property is assessed, a comparison of the actual tax rates here given will be reliable enough for all practical purposes.

Were accurate population figures available, comparison on a per capita basis would be interesting and instructive, but the growth in population has been so divergent in the various cities of the state, particularly during the last two or three years, that it has been thought unsafe to reduce the figures to a per capita basis.

Early Training in Citizenship

Conditions of social unrest can only be settled by justice and right training in citizenship. The kindergarten provides this right training early in life.

The democratic kindergarten is the ideal place for first lessons in efficiency, adaptability and good citizenship. The games teach fair play, honesty, and consideration for the rights of others; the patriotic songs and stories sow the seed of love of country; the block building, clay modeling and paper work lay the foundations of the skilled mechanic and teach head and hand to work together.

If more of our neglected little children

could have this splendid training in honesty, efficiency and self-control, there would be a tremendous saving of money to the state in the maintenance of reformatories, prisons and asylums. Our park benches contain many pathetic examples of dishonest, inefficient, lawless men whose early years were wasted. What better investment can we make of our time, our money and our effort than to forestall this lamentable result of neglect by early training in honesty, efficiency and adaptability, making citizens who are an asset and not a liability to the state?

P. P. CLAXTON,
Commissioner, U. S. Bureau of Education.

School Cafeterias in Seattle

By Frank C. Doig

THE old-fashioned lunch box for school children seems likely to be extinct in Seattle. Rarely now do Seattle children leave their homes in the morning with a pack of books and a lunch; instead, they line up at noon and file past a cafeteria counter, each carrying a tray, and select with care the articles of food that appeal to them.

Here is a sample menu from which they may choose their noonday lunch: Rice tomato soup, 5 cents; braised beef, gravy and potatoes, 15 cents; egg and celery salad, 6 cents; coffee, cocoa or milk, 5 cents; total, 31 cents.

This isn't a hark back to pre-war days, when restaurants advertised meals for 25 and 35 cents. The menu and prices quoted are just a sample of what grade and high school students of Seattle eat every school day, altho few eat lunches that cost as much as 31 cents.

Last year Seattle high school cafeterias served an average of 3,002 lunches daily that cost an average of 15.1 cents each. Half a million such meals were served to the school children thruout the year, and this was done with a loss of but one-tenth of one cent a meal, the loss being

charged to depreciation in the value of the cafeteria property.

It is these lunches that are relegating the old-fashioned lunch box to the discard and furnishing children with good, warm, wholesome meals in the middle of the day. This year the managers of the school cafeterias are reporting business averaging 30 to 40 per cent higher. It is declared that mothers have found it cheaper to give their sons and daughters 20 or 30 cents each and let them buy their lunches than to prepare the lunches at home.

Eleven years ago the first high school cafeteria was organized and tried here under the direction of Mrs. E. P. Dabney, head of the home economics department of the Seattle public schools. The success of the first undertaking convinced the school board that cafeterias would pay in other high schools. So to-day there is a cafeteria in each of the six high schools and eleven grade schools, and ten other grade schools will soon be thus equipped.

Each cafeteria is run independently, but the managers confer frequently and buy their supplies on the same general plan, so that the prices of food are cut down. A large part of the help is supplied by stu-



GIRLS AT LUNCHEON IN ONE OF SEATTLE'S SCHOOL CAFETERIAS

dents, and this work enables many to pay their way thru school.

The cafeterias also offer opportunity for "testing laboratories" for the girls in the home economics department. When they bake bread, pastry or biscuits their products are offered for sale in the cafeterias. But as only the most palatable food may be served, no "failures" are allowed to go to the counters. It is insisted that the food must be of the highest quality, that it must be inexpensive, and that everything con-

nected with the preparation and serving of it must be kept absolutely clean and sanitary.

In 151 days an average of 3,002 meals were served daily. One high school cafeteria showed a net profit of \$344.37. Altho the prices of foodstuffs have advanced, the lunches will cost the students no more this year; for it is believed that with careful management the students can be served nourishing food at an average of 15 to 20 cents a meal.

The Economy of Municipal Ownership

As Demonstrated by the Springfield, Municipal Electric Plant

By Willis J. Spaulding

Commissioner

THE Springfield municipal electric plant is perhaps unique in that it has been developed to its present capacity without issuing any bonds. The present value of the plant is \$212,000. Of this sum, \$38,000 was supplied from taxes in small amounts over a period of years. The balance was provided from earnings and from money voluntarily advanced by private citizens as loans to the City Light Department. These loans have all been repaid with the exception of \$8,000, which is being repaid in monthly installments.

In spite of the handicap of lack of funds, the rates are 40 per cent lower than is usually charged by a private company in a city the size of Springfield (population estimated 70,000).

Lighting rates are 6 cents for the first 30 k. w. h. used in one month, and 3 cents for all over, less a discount of 10 per cent for prompt payment, making the net rates 5.4 cents and 2.7 cents respectively. The power rate is 1 cent per k. w. h. net plus a service charge of 75 cents per h. p. of the connected load for the first 12 h. p., 50 cents per h. p. for the next 20, and 40 cents per h. p. for all over. The cooking rate is 2 cents net.

The municipal plant now supplies over 2,500 customers, which is slightly more than 25 per cent of the total commercial business of the city. The year's output was in excess of 4,000,000 k. w. h. The cost per k. w. h. delivered to the customer's meter, including depreciation, last year was 2 cents. The cost this year will probably not exceed 1.8 cents on the same basis.

Financial Benefit Derived

The financial benefits for the year accruing to the people of Springfield on account of combining the municipal electric plant with the water-works and entering the commercial field are summarized as follows:

Surplus earned	\$22,779.16
Saving in street lighting	10,000.00
Saving by our consumers, account of the difference between the company and the city rates	30,000.00
Reduction by private company from 13 to 11 cents, due to movement to establish combined city plant	25,000.00
Total annual saving	\$82,779.16

The low rates offered by the city have induced many citizens to wire their homes and become electric users, thus bringing this great convenience more nearly within the reach of all. At least 150 of such customers were connected in the last year.

Semi-Annual Index Ready

The Index to Volume XXI is ready for distribution. One copy will be sent free to each subscriber upon request. A charge of 10 cents each is made to non-subscribers and for extra copies.

FORWARD STEPS

REPORTED TO THE AMERICAN CITY

BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and practical value to others engaged in similar work. Photographs, plans, or other illustrative material, should accompany the articles whenever available.

CITY MANAGERS

Educating a City on the Meter Question

LAPEER, MICH.—Early in 1919 it became apparent that the water-works of Lapeer were running behind on account of the unprecedented rise in the cost of labor and supplies. This, however, did not seem to concern the consumer to any great extent. The City Commissioners, however, realized the plight we were in and agreed that a publicity campaign should be started and a limited number of new meters should be purchased and set in meter boxes at once.

This action was formally announced thru the published proceedings of the commission. Immediately a sarcastic unsigned letter appeared in a newspaper to the effect that since this country was a free country the water should be free, and if water was metered all the beautiful lawns would soon become seared and dry and the city would lose its attractive appearance. The letter appears in full below:

EDITOR PRESS: What next? Must we stand for putting water on meters in Lapeer at a cost of nearly \$10,000? Who is going to pay it and when will Lapeer get the money back? Our water has been one of the things which we have always boasted of. We have pointed with pride to its pure, clear quality, its abundance of supply, and now they're going to put a meter on it. Next thing they'll be charging for the air we breathe.

Respectfully,
A TAXPAYER.

This letter was answered with a concise statement in the local newspaper, entitled "Flat Rates Versus Meter Rates." The substance of the article appears below:

Upon due deliberation it has been decided to gradually put all services on meter. Ninety-

eight per cent of all the water-works, both private and municipal, have either all or part of their services metered; and out of all of these none are going back to the flat-rate system. We buy electricity, groceries, railroad tickets—in fact, about everything except water—at "so much per," and it would look reasonable that we should buy our water service the same way.

Our per capita consumption is about 200 gallons per day, which is too high. It shows that a great amount is lost thru defective plumbing, leaky closets or deliberate waste.

The average per capita consumption for all water-works in the United States is about 86 gallons per day. Lansing runs about 100. Buffalo is the highest, running about 230; some cities are as low as 36 to 38 gallons.

A meter rate is therefore essential and will not curtail the necessary use of water. It will be based on two factors: first, the cost of supplying water; and, second, the cost of distribution.

The elements that enter into cost for Lapeer are as follows:

- Fixed expense
- Interest on bonded debt
- Sinking fund to retire bonds
- Depreciation
- Insurance
- Equipment expense—pipe, hydrants, valves, etc.
- Operation expense—engineers, laborers, supplies, coal, fuel, tools, and other miscellaneous articles

The revenues come from rentals, hydrant rentals, new service and miscellaneous sales.

The records here show that last year the pumping plant pumped about 166,000,000 gallons. Of this, probably 30 per cent is non-productive. This will give us a rate of about \$1.20 per 1,000 cubic feet; but, inasmuch as there must be a sliding scale for large consumers, it would be equitable to add sufficient to allow a discount, and enough to small consumers so that we could hold the large consumers.

The rate would theoretically vary from \$1.68 per thousand cubic feet for minimum consumers to \$0.67 for those who could use the highest amount.

In order to pay for new installations, a tap or service charge would be necessary. This could be as low as \$1.50 per quarter, which might be reduced as prices in general declined.

Good authorities claim that the water-works should be self-sustaining, upon the principle that those who get the service should pay for it, and that therefore the city at large should pay for just what it uses, as would a private individual.

It is very likely that thru the installation of meters some very bad leaks will be discovered, and the tendency will be for better plumbing and increased sanitary conveniences.

The argument that consumers will not water their lawns as usual is not borne out in fact by other cities. The usual saving upon the fixture charges more than offsets the amount used on lawns.

The majority sentiment here seems to be for putting the water-works on a systematic meter system rather than putting in a larger pumping station. In putting in meters the business section will first be furnished.

This rate study and the arguments, which are well known to many water-works officials, have had some effect already, and the opposition is fast diminishing without any further effort on the part of the city authorities.

ROY S. BLINN,
City Manager.

- POLICE - DEPARTMENTS

Newspaper Publicity for Traffic Rules

SOUTH BEND, IND.—In this great manufacturing center, the commercial axis of a large territory in northern Indiana and southern Michigan, the street traffic problem has become so tremendous as to almost baffle the South Bend Police Department. While no definite solution has been found, traffic is to-day managed better, I am confident, than at any time in the past.

In our efforts toward solution we have had great aid from the South Bend *Tribune*, which has devoted much space to the subject in the hope of creating better conditions. Recently F. A. Miller, editor of *The Tribune*, originated a large display advertisement appealing to the public to help the police in the management of traffic. This he submitted to me and I gladly gave it my endorsement. It has since appeared in *The Tribune* several times and, I understand, will continue to appear from time to time without cost to the Police Department.

Readers of *THE AMERICAN CITY* may recall a brief item in the issue for September, 1918, relating to assistance given to the

South Bend Police Department by Mr. Miller in the matter of traffic signals. Since he directed my attention to the signals and publicity was given to them they have come into almost universal use in South Bend. They also form a part of the big display advertisement referred to. After this page display appeared, our Board of Safety ordered large cards printed bearing the notice, and these cards are now posted in garages and other conspicuous places.

As South Bend has increased in population the number of automobiles has increased proportionately, and the rate has been accelerated during the last few years, with the result that traffic upon the street is becoming more and more congested. It is the opinion of the department that the majority of automobile drivers do not intentionally violate traffic rules, but do so thru carelessness and thru a lack of appreciation of the dangers they run and the dangers which they create. Traffic officers, therefore, make it a practice to hand copies of traffic ordinances and other literature to both drivers and pedestrians.

At all street intersections where traffic officers are stationed the cross-walks have been marked with white paint so as to call the attention of pedestrians to the proper places for crossing, to discourage jay-walking and to give drivers an opportunity to expedite traffic between street crossings. Safety zones have been marked with white paint in front of theaters and other public places. Signs have been placed at approaches to schools and at dangerous crossings, so that automobile drivers can readily see them and exercise caution. Officers have been stationed near various schools to look after the children as they go to and from school.

We believe that we can readily see the results of our educational campaign, as the public has become better acquainted with traffic rules and has shown a disposition to coöperate with the department. We are having less trouble in handling traffic; and, while we cannot yet demonstrate by tables of accidents a marked improvement, we do know that the public, both on foot and in vehicles, is disposed to be more careful. It is my opinion that if this educational campaign can be continued, the Police Department will ultimately be able to make a good report of results.

PARK DEPARTMENTS

Baltimore's New Breathing Space

BALTIMORE, MD.—The site of the improvement shown in the accompanying photograph, and officially known as Preston Terraces, was formerly a fashionable residential section of Baltimore, but at the time the project was undertaken it was occupied for the most part by shabby old buildings which had been converted into business offices. The plans for this improvement were prepared by Messrs. Carrère and Hastings of New York as part of the general city work which they were doing, but the improvement was carried out under the supervision of the Highways Engineer. The acquisition of the property by the city was handled by the City Law Department and the Commissioners for Opening Streets, and extended over a period of

several years. The total cost of the improvement, as stated by the Highways Engineer, was \$250,000. The Park Department contributed from its funds the sum of \$100,000 for the undertaking and took the Terraces over for planting and general maintenance after the completion of the construction work.

But the important thing about the Terraces is not what they cost but how they serve the public. As will be seen from the photograph, the portion in the foreground is devoted to a parking place for automobiles, thereby relieving to a considerable extent the congestion in the adjacent business streets.

The city secured the opening up of a wide area in the down-town section, which sets off modern buildings and gives a breathing-space where it was badly needed. The cost was high, but it is an investment which the citizens of Baltimore do not regret.

J. V. KELLY,
Secretary, Board of Park Commissioners.



VIEW OF PRESTON TERRACES, BALTIMORE, SHOWING PARKING SPACE FOR AUTOMOBILES

CITY ENGINEERS

New Wires Under New Pavements in Durham

DURHAM, N. C.—The city of Durham, widely known for its industries, has laid out a large construction program under the direction of the City Engineer.

Main Street for a distance of one and one-half miles, including the business district, is being widened and repaved with sheet asphalt, and several other streets are being similarly improved. About three-fourths of a mile of Main Street was paved during the war. A double street railway track, using grooved rail and brick pavement, is being laid thru the business district.

The perspective of the buildings along Main Street, many of which are a credit to the city, has been marred by a network of overhead wires of all descriptions. Pursuant to the orders of the Board of Aldermen, all overhead wires are being eliminated from this street. The telephone wires are being placed underground in a modern conduit system for a distance of one and one-half miles along Main Street and along other streets in the high-value district. The wires of the Durham Traction Company are to be removed from Main Street, and

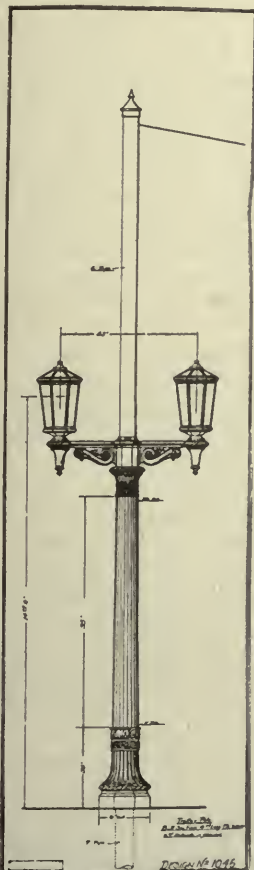
all light and power supply lines will be run up alleys to the rear of the buildings, in accordance with the plans of Charles E. Waddell, consulting electrical engineer.

A white way system designed by Mr. Waddell is being installed by the Traction Company at a cost of approximately \$40,000. The standards are manufactured by the Union Metal Manufacturing Company from a design made especially for the city. It is conceded to be one of the neatest and most substantial white way layouts in the country. The current is to be supplied by underground cables.

The lighting standard, shown in the accompanying illustration, a fluted pressed steel column, is built around the steel trolley pole. This standard supports two solid bronze lanterns of Florentine design with iridescent glass panels and a 400-candle-power tungsten lamp. The system is designed so that alternate standards can be cut out at midnight.

The street construction program will be carried on for several years, and Durham will ultimately be one of the best-paved cities in North Carolina.

H. W. KUEFFNER,
City Engineer.



LIGHTING STANDARD
USED IN DURHAM, N. C.

PUBLIC WORKS - - DEPARTMENTS

Fuel Conservation Thru Smoke Prevention

DAYTON, OHIO.—The present ordinance for the regulation of smoke in the city of Dayton was signed on September 29, 1915, and became effective 30 days later, with the provision that penalties should not be enforced until eight months from the date of its passage. There is one inspector for this department. His duties are: to answer all complaints about smoke; to supervise the installation of new power plants and the rebuilding of old plants; to supervise the heating and ventilating of new or existing buildings where steam or hot water or mechanical ventilation is used; and to supervise the installation of refrigeration plants, to the end that proper safety appliances may be installed.

At the present time Dayton has 63,550 h. p. of boilers. At the time the smoke ordinance was passed there was 22,000 h. p.

of boilers with stoker fires. By the end of 1917 there was a total of 38,300 h. p. of boilers with stokers or some other form of smoke preventive. During the year 1918 there were 16 plants with a total of 3,500 h. p. of boilers equipped with stokers or other smoke prevention devices. Ten buildings were equipped with Downdraft furnaces for heating, and four buildings were supplied with city heat, thus eliminating the smoke from old-type boilers.

From January 1, 1919, to January 1, 1920, there were installed or ordered 32 stokers in 17 plants, with an aggregate of 3,600 h. p. of boilers, which have installed or contracted for stokers, and four stokers have been installed on annealing furnaces. Eight refrigeration plants have been installed, with a total capacity of 175 tons refrigeration. Nine firms are installing or have installed new boilers, a total of 800 h. p. These will all have smoke prevention devices. Twenty-seven buildings have installed or contracted for Downdraft heating boilers and mechanical ventilating systems. Eighteen business places have installed mechanical ventilating systems. These are places where the ventilation has been found to be insufficient or the nature of the business has changed.

There are numerous other places where conditions have been improved. We have also been able, thru the coöperation of railroad officials, to greatly lessen the amount of smoke from locomotives passing thru or operating in the city.

Of the 47,600 h. p. of boilers, nominal rating, that are stoker-fired, there are 21,500 h. p. operating 24 hours a day and 364 days a year. The balance of 26,100 h. p. are run 10 hours a day and 312 days a year. Assuming that these boilers were hand-fired and allowing 5 pounds of coal per boiler h. p. hour, there would be consumed 673,640 tons of coal per year. Any standard stoker will show a saving of at least 10 per cent over hand-firing. Many plants show from 15 to 18 per cent saving. Assuming, however, that the average saving is 10 per cent, there is saved in the above stoker operation a total of 67,364 tons. This amount of coal would require 1,347 50-ton cars, making a solid train $9\frac{1}{2}$ miles long.

All this saving in coal, of course, cannot

be attributed to stokers alone; some of the saving is due to the fact that stoker-fired boilers are usually more expensive and better installations and are better cared for. Also, to offset some of the coal saving there is a large investment charge, and depreciation and maintenance charges.

GUSTAVE A. NIEHUS,
Chief Inspector, Division of Building Inspection,
Department of Safety.

- FIRE - DEPARTMENTS

Blanket Insurance for Firemen

SCHENECTADY, N. Y.—On January 3 the Chief of the Bureau of Fire in Schenectady decided that a blanket policy of insurance for his firemen would be a capital idea. After consulting various insurance agents, the names, ages, and, in each case, the desired beneficiary, were obtained from the men, and the matter was thoroly discussed with John Cole, Commissioner of Public Safety. Each man of the department authorized the Comptroller to deduct from his wages on the 15th of January, April, July and October of each year an amount not to exceed the sum of \$3 per quarter, for the payment of his policy, as long as he is a member of the Fire Department. The Chief advanced the first premium, amounting to \$302.92, to the Prudential Insurance Company of America, thereby insuring every man for one year from January 8, 1920. The cost of this group insurance will be favorably affected thru dividends when earned.

If the employee, when less than 60 years of age and while the insurance is in full force, becomes totally and permanently disabled or so physically or mentally incapacitated that he can earn nothing, the amount of his insurance will be paid to him in one lump sum twelve months after proof of disability, or in monthly installments during five years, beginning six months after proof of disability.

There are 101 men in the department, and 100 of them are covered by this insurance. The remaining man, being away for his health, is not included in the arrangement.

HENRY R. YATES,
Chief Engineer, Bureau of Fire.

Educate the Public and Reduce Fire Risks

Carry the Message of Fire Prevention to the Home, Where Most Fires Originate

By W. A. McSwain

Insurance Commissioner, South Carolina

THERE are a number of agencies active in the elimination of the fire waste of this continent. This problem has been seriously studied for several years, with the result that we have many devices for detecting and stopping fires after they start. Every one knows the wonderful saving that has been accomplished in preventing heavy fire loss by equipping buildings with sprinklers and other appliances to retard the burning of the premises. Local fire departments are being improved in man power and supplied with every device known to fire-fighting engineers, in order that their efforts to prevent the spread of fire may accomplish greater results. States have not been unmindful of the situation; legislatures and municipal governments have enacted into law building codes and other preventive measures which have for their main purpose the safeguarding of lives and property. Many of these

legal measures, however, are remedial rather than preventive.

Why Are the Public Not Awake?

Much good has been accomplished by the agencies mentioned, yet, even with the strenuous efforts of individuals, of fire marshals, of fire departments, of states and municipalities, there has been very little reduction in the fire waste of North America. Why? Is this great waste of life and wealth due to the fact that the citizens of the United States and Canada are not interested in the situation, or is it because our citizens are uninformed as to this great loss of life and property? Most certainly every man, woman and child in the country is deeply interested in every life that is lost, and in every dollar destroyed by the fires which are occurring every minute of the day and night. What, then, is the reason that improvement in the elimination of fire

YOU Help Make MAY a Fireless Month !!



ALARMS OF FIRE

AUG. 1914 - 277

FEB. 1917 - 33

MAY. 1917 ?

Courtesy National Board of Fire Underwriters

A PUBLICITY METHOD WELL WORTH COPYING IN FIRE PREVENTION CAMPAIGNS

The Use of Gasoline -- It Is Touchy Stuff!



PICTURE OF OIL TANK AFTER EXPLOSION

Gasoline should be kept and used only in small quantities, and used only by experienced employes, who know and realize the danger in using same, and know how to handle it safely.

Gasoline should be handled in small safety cans, equipped with safety gauze and safety stopper.

Gasoline is exceedingly volatile and will vaporize when exposed to the air at any temperature down to 15° below zero. This vapor is nearly three times as heavy as air, and when mixed with the proper quantity of air becomes **VIOLENTLY EXPLOSIVE**. The vapor will ignite from any open flame, even from a spark of static electricity from a human body, a spark from an emery wheel or from a sufficiently heated surface.

The gasoline vapor, being heavier than air, will naturally seek a lower level, and if confined where there is poor ventilation, will sometimes remain in an explosive condition for months.

There is a very interesting article by Charles E. Worthington, on "The Use of Gasoline in the Home" in the September, 1916, issue of Safety Engineering, which gives very complete information on the dangers resulting from the use of gasoline.

(Courtesy of Queens Borough Gas and Electric Company)

A STRIKING POSTER FOR DISPLAY IN GARAGES

waste is so small? Is it not that very few persons ever comprehend these occurrences, largely because the country is so vast, and far-away happenings do not seem real? Yet such accounts in the daily press should be of great concern to us all, for it has been accurately ascertained that the largest proportion of the fires occurring in this country are due to carelessness. To put it in other words, after a fire has occurred in a building we have usually determined that it could have been prevented by the exercise of due diligence on the part of the owner or occupant.

Inspection the Remedy

One of the most striking examples of what may be accomplished in the elimination of fire waste is found in the experience of the United States in the housing problem in connection with the World War. Our Government found it necessary to build

many communities entirely of frame construction, to be used as dwellings and dormitories. The buildings were occupied by men from every section of the country. These frame-dwelling cities ranged in population from 60,000 down, and the fire hazard of each building in these cities was equal to that of a frame hotel. In many instances insurance companies decline to accept liability on frame hotels, so that, on the basis of this comparison, we find the Government confronted with what is known in underwriting circles as a special hazard. Yet, without automatic sprinklers, and in many known cases without adequate water-supply, the actual loss of such property has been practically nothing. The reason for the surprising lack

of fires in these frame buildings was that the buildings were subjected to careful inspection at frequent and regular intervals.

Effective Campaigning

The lesson for municipalities is evident. Probably no other phase of fire prevention work is so productive of good results as frequent, regular, systematic inspection. The value of such work is recognized by state and municipal governments in providing and enacting laws which have for their main purpose the safeguarding of lives and property against the ravages of fire waste, yet all regulations up to this time seem to be lacking in respect to the paramount importance of frequency in such inspections.

Where Fires Begin

How to go about a campaign for arousing public sentiment in favor of the elimination of fire waste is the question. In reviewing

the fires which occurred in the United States in 1917, we find that 65 per cent of them started in the homes of the country. In other words, out of a total of 356,896 fires occurring in 1917, the number originating in dwelling houses was 232,021. Now, since we know that so large a proportion of the fires start in our homes, is there not a splendid opportunity to enlist the mothers and children in the elimination of fire waste by careful and frequent inspections, with prompt removal of any unsatisfactory condition?

Can you imagine a more fertile field? Every mother is interested in the life and welfare of her children; every wife is interested in safeguarding her home; the children are equally interested in anything that interests the mother. If we can arouse the mothers and children and housekeepers of the country to an active campaign against fire waste, it is clear that we shall reach 65 per cent of the places where fires begin. I believe that next to the fireside the best avenue thru which we may reach the mothers and children is the public schools. If the school officials and teachers will fully realize their great responsibility, and in turn impress it upon those intrusted to them for training, such an agency will arouse a public sentiment that will be irresistible.

When the sober, constructive, thinking people of this country agreed that John Barleycorn had wrecked enough lives, a movement was immediately started to arouse public sentiment against its ravages, to the extent that in a remarkably short space of time there was scarcely to be found in all this broad land a man, woman or child that did not know of the campaign that was being waged to put the demon rum out of business. What do you think of such a campaign as an example of what should be done with respect to the fire waste of this country? Such a campaign should receive the full accord and coöperation of every individual. Surely there could not be found as many friends for the fire demon as was the case with the whisky demon.

It seems safe to assume that the fight against unnecessary fires will be easier and shorter if we go about the matter carefully and systematically. To inaugurate such a campaign will require careful study on the part of interested and experienced persons. It is with much satisfaction that we note



AN ALLEYWAY IN A GOOD RESIDENTIAL DISTRICT IN BOSTON, SHOWING INFLAMMABLE MATERIAL UNDER WOODEN FIRE ESCAPES

that in some states the women have already taken this matter in hand. The women of North Carolina have organized for the purpose of arousing the sentiment which I have referred to. South Carolina now delivers the message of fire prevention by means of careful and systematic inspections to every child in the public schools.

To sum up, there are many active agencies interested in the elimination of the fire waste. These agencies have been successful in reducing the fire waste to some extent, yet there is need of a much greater, stronger force. Such a force seems to be the arousing of public sentiment to such an extent as will insure the coöperation of every individual in the matter of careful and systematic inspection for the purpose of eliminating careless fires.

National Municipal League

New Officers and Council—Clinton Rogers Woodruff's Valedictory

AT the annual convention of the National Municipal League, held in Cleveland December 29-31, the following officers were elected for the ensuing year:

President, Charles E. Hughes, New York City.
 Vice-Presidents: Richard S. Childs, New York City; J. Horace McFarland, Harrisburg, Pa.; Westmoreland Davis, Richmond, Va.; Samuel Mather, Cleveland; Morton D. Hull, Chicago; Charles Richardson, Philadelphia; Otto Kirchner, Detroit; Julius Rosenwald, Chicago; W. D. Lightall, Montreal; L. S. Rowe, Washington, D. C.; Meyer Lissner, Los Angeles; Mrs. C. C. Rumsey, New York City; A. Lawrence Lowell, Cambridge, Mass.; Albert Shaw, New York City; Oliver McClintock, Pittsburgh, Pa.
 Treasurer, Frank A. Vanderlip, Scarboro, N. Y.
 Honorary Secretary, Clinton Rogers Woodruff, Philadelphia.

The following are the members of the new Council of the League:

Mrs. Albion Fellows Bacon, Evansville, Ind.; M. N. Baker, Montclair, N. J.; W. P. Bancroft, Wilmington, Del.; Charles A. Beard, New York; Alfred Bettman, Cincinnati; Charles J. Bonaparte, Baltimore; Mrs. Sidney C. Borg, New York; Mrs. T. J. Bowlker, Boston; H. L. Brittain, Toronto, Canada; George Burnham, Jr., Philadelphia; John A. Butler, Milwaukee; Harold S. Buttenheim, New York; Fred W. Catlett, Seattle; Harvey Stuart Chase, Boston; Mrs. Caroline Bartlett Crane, Kalamazoo, Mich.; Dwight F. Davis, St. Louis; George B. Dealey, Dallas, Tex.; Mayo Fesler, Brooklyn, N. Y.; William Dudley Foulke, Richmond, Ind.; Harry H. Freeman, Kalamazoo, Mich.; D. Frank Garland, Dayton, Ohio; Herbert Harley, Chicago; Albert Bushnell Hart, Cambridge, Mass.; A. R. Hatton, New York; Raymond V. Ingersoll, New York; Robert D. Leigh, Washington, D. C.; Mrs. Beverly B. Mumford, Richmond, Va.; William B. Munro, Cambridge, Mass.; Robert Treat Paine, Boston; J. W. S. Peters, Washington, D. C.; Lawson Purdy, New York; Thomas H. Reed, San Francisco; Miss Edith Rockwood, Chicago; Miss Belle Sherwin, Cleveland; Robert E. Steed, Norfolk, Va.; Howard Strong, Rochester, N. Y.; Theodore F. Thieme, Fort Wayne, Ind.; L. D. Upson, Detroit; Henry Waite, New York; A. Leo Weil, Pittsburgh, Pa.; Lionel Weil, Goldsboro, N. C.; Addison L. Winship, Boston; Clinton Rogers Woodruff, Philadelphia.

This meeting witnessed the retirement of Clinton Rogers Woodruff as Secretary of the National Municipal League and his election as Honorary Secretary of that organization. In the inscription on a handsome silver cabinet presented to him at the meeting, grateful acknowledgment was made for his services to the League as "its devoted Secretary, its organizing genius, its motive force, its guiding spirit. He found the National Municipal League a mere project; he leaves it the central force of American civics. He found municipal reform a feeble aspiration; he leaves it the foremost achievement of modern democracy."

Mr. Woodruff's valedictory was a summary of municipal progress during the last quarter-century, from which the following extracts are taken:

"When the National Municipal League was organized in 1894, government was about the last thing to claim the attention even of the most conscientious citizen. To-day it is receiving the definite, unrelenting consideration

of a lengthening list of civic bodies; of business men, in their individual and organized capacity; of institutions of learning; of students and investigators.

"Twenty-five years ago instruction in municipal government was unknown. There were no sources of information such as are now provided by the Bureau of the Census, the municipal reference libraries, the bureaus of municipal research and similar bodies, or by the *National Municipal Review* or *THE AMERICAN CITY*. It is now possible to say that 'from the point of view of getting text-books and materials, municipal government is the easiest subject in the whole range of political science.' To-day no other one subject is receiving more thoughtful attention at the hands of teachers and publicists. . . .

"Within the generation in which the National Municipal League has been at work, municipal government in the United States has been changed from a source of shame to one of pride. Graft has become the exception, instead of the constant characteristic. Indifference and inefficiency are yielding to interest and efficiency. . . .

"Home rule for cities, once a far cry in the wilderness, is to-day the guaranteed constitutional right of the cities of one-quarter of our states, and bids fair to become the policy of many more in the near future.

"The city manager movement may be justly regarded as the ripest fruit of the movement for better municipal government. It embodies the short ballot; responsiveness to public opinion; concentration of executive power and responsibility; expert administration of city affairs; the elimination of legislative control over administration—all essential principles of sound governmental practice. The success of the plan has been abundantly proved, although here and there expectations, because unreasonable, have not been met. Like other governmental agencies, it is open to change and improvement, but to-day it stands as the big contribution of political science of the past quarter of a century. Moreover, its expanding application to a lengthening list of cities is developing municipal policies as perhaps no other single factor. It is helping to convert theories and dreams into facts. City planning, zoning, budget making, the preparation of adequate and carefully devised plans for transportation, intelligent housing—all have felt an impetus due to the increase in the number of experts in municipal affairs. Each in itself a highly specialized subject, it naturally expands when encouraged by those who make municipal administration their specialty. . . .

"To have been associated with this movement from its conception, to have been present at its birth, to have shared in its growth, is a heritage of which one may well be proud."

Developments in Electric Street Lighting Units

DURING the war street lighting suffered both in operation and in development. The fuel conservation movement and the general unsettled conditions mitigated against any appreciable extensions of street lighting systems, and most illuminating and designing engineers were engaged in research and development work for the Government.

With the signing of the armistice and the termination of the war, the demand for street lighting has reopened. Old systems are being overhauled and refurbished to repair the neglect of the last two years. New systems are being planned and installed. Designing engineers are at work to meet the new conditions imposed on street lighting apparatus.

The natural reaction from wartime conservation in street lighting encourages higher intensities and more decorative lighting. The resumption of building activities is adding new streets and new territory to be lighted. The ever-increasing high-speed vehicular traffic demands better and brighter illumination for our thoroughfares. Increasing costs of material and labor, combined with the difficulty of securing adequate rates from municipalities, make it hard for central stations to meet this demand.

There seem to be several ways of dealing with the problem. First, municipalities must realize that there is no fundamental difference between electrical apparatus and electrical service and any other commodity. They are equally affected by the increasing costs.

Daily wages are higher, working hours per day have decreased, and the hourly output is less. There can be no compensating decline in the cost of materials, because labor is a large percentage in the cost of raw material. Municipalities must realize that street lighting is a public necessity and as such must receive the proper financial support to keep it effective. Second, central stations may help by selecting the most efficient apparatus and by making use of every method of economical operation. The higher the cost of installation and maintenance, the more important the efficiency of the system as a whole. Third, manufacturers must help by making every effort to simplify apparatus, substitute less expensive materials and reduce manufacturing operations. The new developments in street lighting, therefore, are not radical and revolutionary in scope, but tend toward simplification of apparatus and maximum utilization of light.

Pendent Units

In the pendent unit for series Mazda lamps, the most important addition is the combination of dome refractors and stippled or rippled outer globes. The refractor when used alone has not been universally satisfactory, altho its use has been very general. The collection of dust and dirt is still serious in some communities. This deposit occurs on three surfaces: the lamp bulb, and the inner and outer faces of the refractor. Where dust and smoke are prevalent and where the glassware is not



cleaned frequently, this may account for a 50 per cent absorption of light. By enclosing the dome refractor in a stippled globe only one surface is exposed. In these globes the diffusion is obtained by protuberances and depressions in the surface of clear glass. This breaks up the light, but does not interfere with the directional effect of the refractor. The absorption is practically that of clear glass.

Comparing the stippled globe with the ordinary diffusing globe, it is found that:

1. Its efficiency is 15 to 30 per cent higher.
2. Its appearance is better, since it is the only glass which lends sparkle to the Mazda lamp.
3. It permits the use of the Holophane dome refractor, giving three times the light at points midway between lamps.

When the stippled globe and dome refractor are compared with the bowl refractor, there are the following advantages:

1. More light.
2. Less absorption during operation: one surface exposed to dust and smoke instead of three.
3. Uniform distribution: directly under the lamp 200 per cent more light; at the 45-degree angle 100 per cent more light; at the 10-degree angle only 15 per cent less.
4. Improved appearance: a larger secondary source of light; sparkling—not dead.

Ornamental Units

The single light of high candle-power has proved more popular than the clusters of lower candle-power lamps, from a standpoint of economy, efficiency and appearance. The standards themselves are becoming slender and unobtrusive. The new globes for such standards are of more graceful shapes with smaller top and bottom openings and with as low absorption as is consistent with perfect diffusion. New developments show a serious effort to harmonize the architectural features of the pole, casing and top.

Duplex Units

The most important development in the ornamental lighting field is an arrangement of two lamps in one globe, one above the other, tip to tip. The lower lamp is 600 or 1,000 candle-power and burns until midnight. The upper lamp is 100 or 250 candle-power and replaces the lower lamp during the hours when the streets are deserted and

when a lower intensity of light will be satisfactory. This system, installed at Saratoga Springs, N. Y., was described in detail in the November, 1919, edition of *THE AMERICAN CITY*.

Parkway, Boulevard and Residential Lighting

While pendent units are still used for most of the above classes of lighting, there is an increased demand for more decorative units. Here the conditions are somewhat different from those in the business districts. All upward light is either wasted or is a source of annoyance to residents along the street. Here again the dome refractor and the stippled globe are useful. The dome refractor eliminates all upward light. The stippled glass assists in the diffusion and gives a live, sparkling effect. The actual intensity of light on the street surface is 100 per cent greater than with a round ball globe. Assuming a satisfactory intensity of light, only one-half the number of units is required. An intensive parkway system is being lighted by these units in Toledo, Ohio. A typical installation for bridge and viaduct lighting is in operation in Cincinnati, Ohio.

Magnetite Arc Lamps

To increase the actual illumination from magnetite arc lamps the ingredients of the electrodes are now compounded under great pressure. This permits a high efficiency mixture, giving 30 to 40 per cent more light than the standard, with at least equal life. If the standard intensities are satisfactory, the compressed electrodes will yield an increased life of 30 to 40 per cent.

With this electrode it is possible to use a glass mirror internal reflector, which adds a further improvement to the effective illumination. In the unmodified magnetite arc 60 per cent of the light is above the horizontal. The present porcelain reflector cannot be made particularly efficient and becomes of less value as it is discolored by fumes. The glass reflector will be initially of higher efficiency and will be more easily cleaned.

Pendent magnetite lamps have been regularly used with clear globes. With the increased light from the new electrodes, it is possible to use a blown rippled globe, which gives an appreciable degree of diffusion and

a no higher absorption than the clear glass.

The increased efficiency electrodes also permit the use of a lower wattage adjustment on each lamp without reducing the effective lighting. This saves 40 watts per lamp and increases proportionately the capacity of the rectifier. In Detroit, for instance, they are operating 90 to 94 low-wattage lamps on each 75-light rectifier.

Conclusion

The simplicity and flexibility of the Mazda lamp have given it a very definite place in street lighting. However, these very characteristics are tending toward a serious situation. With the arc lamp, there was a rather limited downward range in intensity. The Mazda lamp, with its variety of candle-power sizes, permits the use of lamps giving intensities totally unfit for good street lighting. Because of this, the increased cost of apparatus and the desire of municipalities to keep down their street lighting budgets, there is found a steady reduction in the sizes of lamps used and a corresponding reduction in the general lighting. Furthermore, with the arc lamp it was necessary to visit each lamp periodically, replace the electrode and clean the globe. Incandescent lamps are renewed three times a year, and in many cities only twice a year. There is a growing tendency to neglect the lamps except at these times, with the result that accumulation of dust and dirt cuts down the light and ruins the appearance of the installation.

There is a steady improvement in the quality and quantity of light in our homes, in stores and in factories. Street lighting standards must keep pace. Lamps of sufficiently high initial candle-power should be selected, and replaced when the efficiency has fallen to such a value that it is most economical to discard them. Fixtures must be properly maintained and the glassware



DETAIL OF LIGHTING GLOBE USED IN SARATOGA SPRINGS, N. Y.

periodically cleaned. The entire expense of the street lighting installation goes into the production of light. False economy in maintenance may cut in half the utility of the entire investment.

ACKNOWLEDGMENT.—Prepared with slight revisions from a paper read by A. D. Cameron at the annual convention of the Illuminating Engineering Society.

Are Your Street Signs Properly Illuminated

A very interesting point in connection with street lighting which has never received adequate attention is the proper illumination of street signs in cities. Very frequently it is exceedingly difficult to read these name plates. They are usually at a considerable elevation, and after sunset are frequently invisible. They should either be sloped or so arranged that reflected lights from near-by street lights will properly illuminate them. This will remove one considerable cause of annoyance to strangers in any city after sunset.

What the State Health Departments Do for the Municipalities

Part II—New Mexico—Wyoming

THE coöperation and assistance of the state health departments in this country is becoming an ever-increasing feature in public health activities. Municipalities look to the state for a great deal of assistance, and thru acts passed by the state legislatures considerable authority is given to the state health departments in

controlling municipal activities, particularly in times of emergency, such as epidemics and great disasters. Thru the courtesy of the officials of the various state health departments, THE AMERICAN CITY has been able to summarize the work which each department is prepared to do for the municipalities within the borders of its state.

NEW MEXICO

Owing to the small appropriation (only \$13,000 per annum) the State Department of Health cannot give to municipalities the extensive assistance offered by other states. The services available at present are listed as follows:

Division of Preventable Diseases

(a) Epidemiology—tracing the source of epidemics and instituting control measures.

(b) Coöperation in the establishment of free clinics for the treatment of venereal diseases.

(c) A public health laboratory is being installed for the diagnosis (free) of such communicable diseases as diphtheria, typhoid, tuberculosis, malaria, gonorrhœa and syphilis.

Division of Sanitary Engineering and Sanitation

(a) Water-supplies—investigations and engineering advice as to sanitary quality of water-supplies, and advice as to the advisability of purification processes.

(b) Sewage disposal—investigation and advice as to existing and projected sewage disposal plants.

(c) Sanitation—advice as to problems of waste disposal.

(d) Investigation and advice as to sanitation of milk and other food supplies.

(e) Bacteriological and chemical analyses of water and sewage will be offered free as soon as the laboratory is equipped and operating.

H. F. GRAY,

Chief, Division of Sanitary Engineering and Sanitation.

NORTH CAROLINA

The state law gives the State Board of Health ample powers to advise and direct municipalities in their work of controlling and preventing disease and promoting general health. Special helps given are as follows: Birth and death records are collected by a Bureau of Vital Statistics and issued in statistical form for the benefit of physicians, health officers and municipal authorities. All cases of infectious and contagious diseases are reported to the State Department, and the Bureau of Epidemiology has been provided by state law to see that all rules and regulations of the State Board governing the control of such diseases are faithfully executed. A prophylactic is distributed by this Bureau for use in the eyes of newborn babies.

The State Sanatorium for the Treatment of Tuberculosis not only treats cases, but thru its Extension Department requires the registration of all cases of tuberculosis thruout the state and distributes literature on its prevention and cure. The State Laboratory of Hygiene supplies to municipal health authorities diphtheria antitoxin and anti-typhoid vaccine, makes regular monthly analyses of samples of water from public water-supplies of the state, and does such other work as is generally done by laboratories of this kind. Whenever the state laboratory analyses of water show indications of dangerous or questionable supplies, a State Board engineer immediately inspects the local plant, and requires the installation of a chlorine or

hypochlorite plant, or some other means of purification. Plans for proposed water-works or sewage disposal plants must be submitted to the State Board for approval. All inland waters are under the general care and oversight of the State Department, which coöperates with local authorities in enforcing health rules.

The life extension work conducted by the State Board comprises the examination of adults between the ages of 25 and 45 for indications of onsetting chronic diseases and the taking of measures for their relief and correction. The Bureau of Medical School Inspection inspects the schools in one-third of the state each year. The educational work of the State Board consists in issuing daily or weekly press articles, a monthly health bulletin, lantern slides and lectures, and a traveling motion-picture outfit, and in donating the use of about \$3,000 worth of exhibit material to fairs, schools, civic leagues, women's clubs, etc.

W. S. RANKIN, M. D.,
State Health Officer.

NORTH DAKOTA

The State Board is empowered by law to take the initiative in instituting health measures in the municipalities. The full time of a state visiting nurse is at the service of all cities and towns and rural communities, her salary being paid by the North Dakota Public Health Service, a coöperative organization supported by the State Board of Health, the Anti-Tuberculosis Association and the Public Health Laboratories. The State Board endeavors to reduce the death rate of children thru the efforts of this visiting nurse and of women's clubs, and by distributing bulletins of statistics showing where infant mortality is highest. Thru its epidemiologist the State Board assists municipalities in the prevention and control of epidemics, on report of cases to the central office. The epidemiologist also supervises the building of water-works and sewerage plants, and visits these plants from time to time for the purpose of advising and directing the local health officers.

G. MCGURREN, M. D.,
Secretary, State Board of Health.

NEW YORK

The following necessarily brief statement of the work of the State Department of Health in its different divisions indicates the types of service which are available for the municipalities of the state:

The State Commissioner of Health is the administrative head, and also an ex-officio member of the Public Health Council, which is empowered by law to establish qualifications for sanitary supervisors, local health officers and other public health officials, and to enact sanitary regulations dealing with any matter affecting public health. The work of the Division of Vital Statistics includes: the supervision of all records pertaining to births, deaths and marriages; oversight over burial permits, birth certificates, marriage license forms, and the licensing and instruction of midwives; the study of causes of excessive mortality in any municipality; and the analysis and tabulation of the health records of each city. The Di-

vision of Child Hygiene endeavors to arouse communities to the necessity for child welfare work by means of public exhibits, lectures, leaflets and pamphlets; points out methods of reducing excessive infant mortality; secures the establishment of infant welfare stations; and labors to improve the general milk supplies of municipalities.

The Division of Communicable Disease has supervision over the work of the local health officers throughout the state, and includes in its work a study of epidemics, in which the State Epidemiologist and Sanitary Supervisors work in conjunction with the local health officer. This Division also has general control of procedure in regard to the reporting and isolating of infectious disease, the cleansing, disinfection and placarding of houses where infectious diseases occur, and the exclusion from schools of infected persons; assists local health officers in making sanitary surveys of their districts; and prepares and distributes circulars on communicable diseases. The Division of Tuberculosis is charged with the registration and sanitary supervision of all cases of tuberculosis occurring in the state.

The work of the Engineering Division includes: examination and approval of plans for public water-supplies and sewerage plants; investigation of public nuisances; advice to municipalities concerning all questions of general sanitation in connection with water, sewerage, garbage and stream pollution; and investigations of milk pasteurizing plants and of the sanitary conditions of summer resorts and state institutions.

The Division of Laboratories and Research prepares and distributes to physicians and local health officers serums, vaccines and viruses for the diagnosis, prevention or treatment of diseases; prepares arsphenamine for the treatment of syphilis; examines specimens for diagnosis of communicable diseases; and at the request of local health officers makes chemical and bacteriological examinations of water samples. The Division of Public Health Education arranges each year for a State Sanitary Conference of the local health officers, issues a health bulletin monthly, has editorial supervision of all Department publications, issues special circulars from time to time, enlists the coöperation of the newspapers in spreading health propaganda, and provides frequent exhibits, lectures, lantern slides and moving picture films.

The Bureau of Venereal Diseases prepares and distributes pamphlets and placards on syphilis and gonorrhea, and supplies lecturers for public meetings, establishes and supervises clinics for diagnosis and treatment of these diseases, provides arsphenamine for treatment of indigents and conducts social service work in connection with clinics.

B. R. RICKARDS, M. D.,
Assistant to Deputy Commissioner of Health.

OKLAHOMA

In general, the State Board of Health works independently of municipal authorities. In most of the large cities, and in many of the smaller places, the local health authorities are active and efficient; however, in a very few of the smaller towns, where the local authorities are lax, the State Health Board takes the initiative, acting either on the complaint of citizens or on reports of its own inspectors. In handling epidemics and meeting other emergencies in rural districts, it has usually been necessary for the State Board to institute and carry out its own methods.

Regular inspections are made all over the state by Board inspectors of hotels, rooming-houses, groceries, meat markets, confectionery shops, depots, and, in general, all places whose business has direct bearing upon public health; in addition, inspections are made of water and sewerage systems and of general sanitary conditions. Where evils are brought to light by these investigations they are generally corrected under direct orders from the State Health Board. Effort is generally made to work thru the local authorities; where they will not act the Board takes the matter in hand. Under a recent law the Board is given far-reaching powers over the public water-supply and sewerage systems of the state, having power to supervise all construction plans and to prohibit any construction which may endanger public health. Drastic penalties are provided for failure to comply with the rulings of the Board.

A. R. LEWIS, M. D.,
State Commissioner of Health.

OHIO

The State Department of Health of Ohio stands in both a supervisory and an advisory relation to the municipalities of the state. In general it seeks to coördinate the health activities of the local districts in such a way as to build up a unified health program for the state. The local health authorities must enforce regulations adopted by the State Department for the protection of the public health, but are free to make regulations of their own that do not conflict with state regulations. The State Department has power to make suitable provision for local health protection where local authorities fail to do so. In matters of stream pollution, as affecting public water-supplies, the Department can act to force correction of conditions only upon complaint by a local board of health or governing body or by ten electors. Plans for additions or changes in local water-supply or sewerage installations must be approved by the State Department before such improvement can be carried out.

For advisory and investigational work the Department is organized into divisions and bureaus dealing with communicable diseases, sanitary engineering, tuberculosis, venereal diseases, child hygiene, public health nursing, industrial hygiene, plumbing, hospitals and health education. Expert service in all these fields is at the disposal of local authorities. A Division of Laboratories gives free diagnostic service in certain diseases.

Investigation and control of epidemics, in coöperation with local officials, and recording of morbidity statistics are functions of the communicable disease division. The Division of Sanitary Engineering receives monthly reports from purification and sewage disposal plants and regularly inspects such installations. Tuberculosis cases are followed up by state or local nurses, and the Bureau of Tuberculosis encourages the extension of tuberculosis hospitals, which may be established by municipalities or by inter-county districts, and whose operation is supervised by the State Department. Venereal disease control is in accordance with the federal program; twenty-four free clinics are in operation, a number of them maintained jointly by the state and local authorities. Plumbing inspection is conducted by the State Department where local authorities have not established such service. The child hygiene and industrial hygiene branches of the State Department work in close coöperation with local authorities. A survey and classification of hospital facilities of the staff is in progress. Public health education is carried on by all the usual means, and facilities of the state in this field are at the service of the municipalities.

A reorganization of the local health machinery of Ohio, effective January 1, 1920, sets each city of more than 25,000 population aside as a separate health district and combines all smaller municipalities with their respective county districts, except that by special action of the State Department of Health in individual cases cities of from 10,000 to 25,000 may be made separate municipal districts also. Each health district—municipal or county—must employ a whole-time health commissioner, with at least one nurse and one clerk, all of which employees must be appointed from civil service lists.

A. W. FREEMAN, M. D.,
State Commissioner of Health.

OREGON

The State Board of Health has general supervision of the interests of the health and life of citizens of the state. It makes sanitary investigations and inquiries respecting the cause and prevention of diseases, especially epidemics, including those of domestic animals; it studies the causes of mortality, and the effects of localities, employments, conditions, foods, beverages, habits and circumstances upon the health of the people. What is done for the state at large of course benefits the municipalities, but the State Board does not interfere with the work of the local authorities unless requested by them to do so.

The work of the State Board which is of greatest benefit to the municipalities is the supervision maintained over the installation of water and sewerage systems. Plans and specifications of proposed systems must be submitted to the Board for approval before the work is undertaken. In this way the purity of municipal and domestic water-supplies is protected and conserved and the pollution of streams is prevented. A bacteriological laboratory is maintained,

where examinations are made of domestic and municipal water-supplies, and of all material sent in by the physicians thruout the state to aid in their diagnosis and the detection of incipient epidemics. The State Board of Health maintains a Bureau of Nursing whereby counties may secure county public health nurses. The Bureau of Nursing is operated in conjunction with the Oregon Tuberculosis Association.

DAVID N. ROBEY, M. D.,
State Health Officer.

PENNSYLVANIA

The State Department of Health is given power to set aside the boards of health of boros and first-class townships and to perform their functions whenever, in the judgment of the Commissioner of Health, the public safety requires it. In the case of cities the Department may enter and take any steps deemed necessary whenever it is considered that internal conditions are creating a danger of spreading disease to outside communities. Some of the work of the State Department which can be definitely classed as services to municipalities is briefly outlined herewith:

Direct administration of all health matters in 154 boros, most of which are places where the local boards have been declared unsatisfactory; registration of births and deaths for every municipality; special baby-saving exhibits, and the distribution of literature on the subject and of instructions for organization of local efforts; free tuberculosis dispensaries in 116 municipalities; free distribution of diphtheria and tetanus antitoxin and typhoid and smallpox vaccine thru agents stationed in or adjacent to every municipality in the state; free laboratory analyses of sputum, cultures, etc., for physicians having patients unable to pay for such work; school medical inspection at state expense in cities and towns of less than 5,000 inhabitants; direct control over all water-supplies and sewage treatment plants of the state, with power to approve or disapprove all construction plans before they can be carried out, and the power to require any municipality to erect a sewage treatment works; inspection and correction of housing conditions; inspection of hotels and public eating-houses under a special act of the Legislature; and a state-wide system of public health education thru newspapers, special literature, the distribution of sets of model health ordinances, traveling health exhibits, lectures, motion pictures and models.

RHODE ISLAND

The State Board of Health coöperates with city authorities in the enforcement of their health regulations, furnishes free antitoxins, and examines and reports on public water-supplies thruout the state once a month.

B. U. RICHARDS, M. D.,
Secretary, State Board of Health,

SOUTH CAROLINA

A model vital statistics law gives the State Board of Health power to create and maintain a complete and accurate system of registration of births and deaths and to compel obedience to the law upon the part of all persons from whom information for this purpose may properly be required. The Board has general supervision over the municipalities in their efforts to lower infant mortality rates, and assists the municipalities by sending pamphlets and public health nurses when requested. Whenever there is suspected to be any contagious or infectious disease or nuisance detrimental to the public health in any town or city, the State Board is empowered by law to enter upon the suspected premises for the purpose of abating such disease or nuisance. The State Health Officer also visits cities upon request, to investigate conditions and advise with the local authorities. In case of epidemics the State Board has absolute authority and assists with both men and money.

All water-supplies are examined chemically and bacteriologically each quarter, or more often when the Board is requested to do so. Should such inspections show a condition dangerous to the public health, the Secretary of the State Board notifies the mayor, the municipal health officer and the superintendent of the water-works, and demands the immediate removal of the dangerous condition. If the order of the State Board is not obeyed, a plain statement of the facts is printed in one or more of the local papers for the information and protection of the citizens using the water. The State Board has supervision over sewage

and waste disposal in the state, and makes rules and regulations governing this work. The state law empowers the Board to make all necessary inquiries and investigations relating to the sale of adulterated foods and harmful drugs, and to adopt such measures as it may deem necessary to enforce the food and drugs laws.

JAMES A. HAYNE, M. D.,
State Health Officer.

SOUTH DAKOTA

Owing to insufficient appropriation and to the fact that South Dakota is preëminently a rural state, with only three cities of the first class, the largest of these containing only about 20,000 inhabitants, it is evident that it is impossible for the State Board of Health to take any effective special steps to assist the municipalities. The health administration is carried on by the "county unit system," each county having a president, a vice-president and a superintendent.

P. B. JENKINS, M. D.,
Superintendent, State Board of Health.

TENNESSEE

Within the last ten years the Tennessee Board of Health has greatly extended and developed its work thruout the state. The Board now has a Division of Sanitary Engineering which is engaged in making surveys of public water-supplies and sewerage systems in the towns and cities thruout the state. This Division will give whatever help it can in bringing about needed improvements in the water-supplies and sewerage systems.

The laboratory of the Board has extended its services to all towns of the state which do not maintain laboratories of their own. Any water-supply which is used by any large group of persons will be examined whenever it is thought that such examination is necessary. The Division of Venereal Diseases of the State Board is now coöperating with the larger cities of the state in the maintenance of clinics and other activities for the control of venereal diseases. The Board is also making malaria surveys of a number of towns, and will direct the necessary work for malaria control in any towns where this disease is prevalent, provided the town will assume a certain portion of the cost incurred in carrying out intensive control measures. Investigations are also being carried on in the management of any communicable diseases in any town in the state. There are many minor activities engaged in by the Board which vitally affect the welfare of the communities.

OLIN WEST, M. D.,
Secretary, State Board of Health.

TEXAS

The Texas State Board of Health assists the municipalities by advice and direction; by recording and publishing vital statistics; by laboratory analyses of water samples, sputum and submitted specimens for diagnosis of communicable disease; by the distribution to physicians and local health officers, of vaccines and antitoxins; by periodic examinations of water-works, sewage disposal plants, and the sanitation of food shops and other places having a direct bearing upon the public health, by urging upon municipalities the building of water purification works, sewerage systems and sewage treatment plants where needed; and by the issuance of health bulletins and other literature on general health problems. Literature and posters were provided for cities and towns in a recent state-wide anti-rat campaign, conducted by the State Board of Health.

The advice and direction of the Board have also been of service to municipal authorities in their efforts to exterminate the mosquito, have caused many cities to greatly improve the lighting, heating, ventilation and plumbing facilities in many public buildings, and have led a number of cities to see the advantage in supervising the slaughtering of animals. The Texas State Board of Health has, furthermore, established health centers; conducted exhibits at fairs; furnished directors for malaria work; furnished schools and municipalities with educational slides and films, accompanied by lectures; conducts and directs clean-up campaigns; takes charge of epidemic centers; establishes venereal disease clinics; conducts school for filter plant operators.

C. W. GODDARD, M. D.,
State Health Officer.

UTAH

The State Board of Health endeavors to assist local communities in every way in its power to promote the public health, but inability to secure adequate legislation and funds has limited its powers. Vital statistics are collected by the Secretary of the Board, who is the State Registrar. While as yet it has been impossible to secure legislation providing for official authority to control water-supplies and sewage disposal, the Board inspects water-supplies and sewage disposal systems and makes recommendations, as a result of which a large number of towns have installed improved water systems and sewage disposal plants during the last five years.

Sanitary regulations of theaters and other public buildings are promulgated and enforced by the Board. For several years annual state-wide "Clean Town Contests" have been conducted by the Board, also sanitary surveys. A system of public health nursing is being inaugurated, and efforts, as yet unsuccessful, to secure legislative provision for full-time district health officers have been made. The Board supervises and directs physical tests of school children by teachers.

State venereal disease clinics have been established in the principal cities, and free laboratory tests of venereal and other diseases are furnished physicians free of charge by the Board, as are also certain vaccines and salvarsan. During the influenza epidemic, nurses and other agents of the State Board of Health visited all infected localities and cooperated with and directed the local health authorities in the exercise of measures to control the spread of the disease.

T. B. BEATTY, M. D.,
Secretary, State Board of Health.

VERMONT

Thru the efforts of the State Board of Health, the last Legislature passed a law by which all local health officers in towns under 5,000 population are abolished, and in their place the state is divided into ten sanitary districts with full-time health officers in each. These are appointed and may be removed by the State Board of Health and receive their salary and expenses from the state. This system went into operation July 1, 1919, and is proving eminently successful. The State Laboratory of Hygiene makes free examinations of all material submitted for diagnosis of communicable diseases, and regular analyses of all public water and milk supplies.

Plans of public buildings, including schoolhouses, must be submitted to the State Board for approval, thus furnishing it with a means of suggesting and enforcing many changes in the interest of public health. An engineer is employed to supervise the erection of fire escapes and to give advice in regard to water-supplies and sewage disposal. An inspector from the state office is available at all times to aid local health officers in their work. Free lectures, with or without motion pictures, are available to municipalities on various subjects relating to public health, and during the automobile season a lecturer is kept busy traveling from town to town on tuberculosis educational work.

CHARLES F. DALTON, M. D.,
Secretary, State Board of Health.

VIRGINIA

The cities of Virginia, where charters so provide, have full authority over matters of public health relating exclusively to the locality; but where no local board of health is appointed, the State Board of Health may make appointments, and where an epidemic of disease breaks out and is not properly controlled by the local authorities, the State Board may act. Municipalities are required to submit plans and specifications for new water-works systems to the State Board for its approval, and must obtain a permit for the work before it can be undertaken. Outside of the above provisos, Virginia's specific health work for the municipalities is predicated upon requests from the local authorities.

The work done upon request includes: the investigation of outbreaks of communicable disease; coöperation in the medical inspection of school children; the services of lecturers, epidemiologists and special investigators for municipal surveys, etc.; the conduct of tuberculosis clinics in coöperation with the Virginia Anti-Tuberculosis Association; the examination of specimens of water to determine their fitness for drinking purposes; the inspection of water-works and sewerage systems; advice to cities planning new water-works systems; the dissemination of educational literature and the loan of exhibits and such other supplementary services as are within the province and capacity of the Board. Pure food inspections are under the direction of the State Dairy and Pure Food Commission, and not under the State Board of Health.

ENNION G. WILLIAMS, M. D.,
State Health Commissioner.

WASHINGTON

While the State Board has considerable power and can take the initiative in the management of contagious diseases in any city or town, it has only advisory power in the matters of water-supply and sewage disposal. The Board is, however, seeking legislation to give it a wider scope along these lines. In the registration of births the State Board has a model law under which to operate, and by means of inspectors and prosecutions for infractions of the law, has established this work on a satisfactory basis. The Department of Communicable Diseases is charged with the work of handling quarantinable diseases, and is empowered by the Legislature to make all necessary rules and regulations covering such cases. Physicians are required by law to report all communicable diseases directly to their local health officers, who, in turn, must report them at once to the State Board, except in cities of the first class. Prosecution is made by either local or state authorities for violation of this law. In case local authorities fail to cope with any situation, it is incumbent upon the State Board to give instructions, see that they are carried out, and even take complete charge at the expense of the community. Lacking statutory powers, the State Board has to depend largely upon educational propaganda whenever the need of urging upon communities the installation and maintenance of pure water-supplies and proper sewage disposal becomes apparent. The educational work of the State Department is in charge of a publicity man, who devotes his whole time to preparing news items on health matters with the coöperation of all the departments of the Board, and to placing these items with the daily and weekly papers of the state.

JOHN B. ANDERSON, M. D.,
State Health Commissioner.

WISCONSIN

The State Board of Health inspects, either upon its own initiative or upon request, any public or private institution of any city, town or village, and recommends the steps necessary for sanitary improvements. It assists each local health officer in making an annual sanitary survey and in maintaining a continuous sanitary supervision; and it stands ready to furnish any city, town or village expert advice and assistance at any time in the solution of its health problems. It keeps an accurate legal record of all births, marriages and deaths in the state, and makes a special study of the causes and methods of prevention of excessive mortality from any disease in any portion of the state. When an epidemic occurs in any community it sends an expert to investigate the cause and recommend measures of prevention; and in case the local authorities are unable to control the situation, it assists until the epidemic is under control. It collects reports of all communicable diseases and assists local health officers in guarding against epidemics, provides rules and regulations governing quarantine; furnishes literature about the cause and prevention of communicable diseases; supplies diphtheria antitoxin, smallpox vaccine and tetanus antitoxin at wholesale prices to any citizen of the state, and, thru the State Laboratory of Hygiene, supplies anti-typhoid vaccine free of charge to all physicians of the state.

The State Board controls the construction and operation of water-supply and sewerage systems and sewage and refuse disposal plants, investigates all sources of water and ice supply, all sewerage systems and sewage and refuse disposal plants, and is empowered by state law to compel the operation of these systems and plants in such a manner as to protect public health, or to order their alteration, extension or replacement. All prospective owners of water-supplies must file complete plans of projected water and sewerage systems, and the Board may require the filing of plans of old works as well.

The State Laboratory of Hygiene examines submitted specimens for diagnosis of disease free of charge. Another important service of the State Health Depart-

ment is the distribution, free of charge to any citizen of the state, of pamphlets relating to the prevention and control of communicable diseases, the prevention of infantile blindness, sanitary disposal of creamery waste, methods of constructing residential sewage disposal plants, the proper construction of outhouses and other vital subjects. Lecturers are also sent free of charge to public meetings to speak on any health problems.

L. W. HUTCHCROFT,
Statistician, State Board of Health.

WEST VIRGINIA

The work of the State Department of Health is handled by three Divisions: the Division of Preventable Diseases; the Division of Sanitary Engineering; and the Division of Child Hygiene and Public Health Nursing. Work is also done in vital statistics. Services rendered to municipalities by the Division of Preventable Diseases include: epidemiological work to trace the origin of infection and to prevent its further spread, when local outbreaks of diseases are reported; notification of cities of instances of infection which have not been reported direct to the local health office; educational campaigns carried on thru local newspapers whenever an outbreak of a disease appears and at other times; collection of vital statistics, and the publishing of the results of this work in the columns of local newspapers with the intent of teaching the public the specific local needs as revealed by the birth and death records; local inspection of food supplies, of dairy farms, and of the sanitary conditions of industrial plants, sanitary surveys of towns, including the investigation of provision stores, the presence, transmission and control of communicable diseases; educational work, thru addresses, health exhibits, and the intensive stimulation of local communities to develop their individual health problems, such as school inspection, dairy farm improvement and anti-tuberculosis work.

The Division of Sanitary Engineering aids the cities and towns in their problems of water-supply, sewerage and the disposal of sewage, garbage and other wastes. All water-supply and sewerage work, whether municipal or private, must receive the approval of the State Department of Health before construction may be begun, and this supervisory duty, devolving upon the Division of Sanitary Engineering, keeps the Division closely in touch with affairs in the municipalities. In certain instances, in the smaller towns, the Division has itself made complete surveys and designs for water-supply and sewerage systems, rather than permitting the situation to remain in lethargy.

The Division of Sanitary Engineering inspects the heating, lighting and ventilating facilities of public buildings, workshops and schools, over which the Department has regulatory authority. In the past a great deal of educational work thru lectures, moving pictures and exhibits has been done in the smaller municipali-

ties and the rural districts toward the advancement of "country cleanliness." These efforts have, in large part, been in cooperation with the West Virginia Agricultural Extension Service, which has splendid local organizations in each county, and the results have proved so valuable and far-reaching that an additional member is to be shortly added to the Division's staff for the furtherance of this work alone.

Activities of the Child Welfare and Public Health Nursing Division include educational campaigns thru press, schools, women's clubs, Red Cross, Extension Division of the Agricultural Department, etc., for the development of child welfare work in the state, development of community health programs and public health nursing, both in specialized and generalized fields. This Division, thru cooperation with the National Organization for Public Health Nursing and the American Red Cross, seeks to provide qualified public health nurses for the various organizations and communities of the state and to stimulate progress and proficiency among the workers in the public health nursing field.

One year ago an Anti-Venereal Bureau was established as a sub-division of the Division of Preventable Diseases, and a very active anti-venereal campaign has been conducted during the year. This will be continued indefinitely.

S. L. JEPSON, M. D.,
State Health Commissioner.

WYOMING

The Secretary of the State Board of Health is state registrar of vital statistics. The Board is empowered to appoint local registrars and to make and enforce all necessary rules and regulations for the collection of these statistics. The State Board has also power to prescribe rules and regulations for the management and control of communicable diseases, and to prescribe and fix penalties for the violation of such rules. In case of epidemics, the Board has power to make all necessary investigations, to modify or abrogate quarantine regulations, and to adopt such measures for the general vaccination of the inhabitants of any city or town as it may deem necessary.

The county health officers are appointed by the State Board, and are under its direction and supervision. All cases of communicable disease, including venereal diseases, are reportable by the county health officers to the State Board, whose duty it is to give like information to local health officers concerning any threatened danger to the public health. Upon petition of at least twenty taxpayers in any community, the State Board of Health will inspect water-works, sewers, insanitary buildings, or other conditions, and is empowered to require a municipality to remedy any conditions that in its judgment are considered likely to produce or cause the spread of epidemic diseases.

C. Y. BEARD, M. D.,
Secretary, State Board of Health.

The Value of Public Health Nurses

It would be a long story to describe in detail all the important activities now carried on in a modern health department by public health nurses. The fact is that the work of these newer recruits to the ranks of public health workers has proved invaluable. They have studied and reported on the home conditions so frequently responsible for disease; discovered unreported cases of infectious diseases; given practical instruction in the prevention and care of infectious diseases; collected epidemiological and statistical data; supervised the maintenance of quarantine measures; helped in securing proper medical and surgical treatment for the sick; in short, they have made possible the practical utilization of valuable medical knowledge and experience for the promotion of health and welfare.—From *Public Health*, published by the Michigan Department of Health.

Reforestation in Southwestern Pennsylvania

Municipalities and Water Companies Plant Many Seedlings to Protect Watersheds and Provide for the Future

By Walter D. Ludwig

District Forester, Pennsylvania State Department of Forestry

MANY of the water companies and municipalities, as well as steel, coal and coke companies, in southwestern Pennsylvania, are realizing the importance of reforesting their barren and denuded watersheds and timberlands. Of the million seedlings planted in this district during the last few years, such corporations have planted 655,575 seedlings for reforestation purposes, the water companies supplying municipalities leading the list with 426,775 trees. The number of seedlings planted by

when records from the whole of Pennsylvania show that 44 water companies in the state have already set out a total of 1,730,000 trees, which is over 18 per cent of the total number distributed by the Pennsylvania Department of Forestry. They planted 599,275 trees in 1919.

A well-protected watershed, covered with trees, leaf litter, moss and other débris of the forest, tends to improve the water-supply by preventing rapid run-off and erosion. When this forest cover is destroyed thru



LARGE-SCALE PLANTING IN A PENNSYLVANIA REFORESTATION PROJECT

water companies each year in this district is as follows: 1916, 150,500; 1917, 163,100; 1918, 190,000; 1919, 151,975.

The city of Altoona, which owns and controls its own water-supply, has been a consistent planter of seedlings on its watersheds, using a total of 171,000 seedlings for this purpose; and the Johnstown Water Company, supplying the domestic needs of the city of Johnstown, has planted 161,000 seedlings.

Great Importance of Work

The importance of this work on the part of the water companies is plainly evident

fire or other agencies, the water-supply is the first to be affected, and unless something is done to remedy conditions serious results are bound to follow.

A careful survey of forest conditions in southwestern Pennsylvania shows that the forests are in a seriously depleted state, with thousands of acres of land and watersheds producing nothing of value, and forest fires destroying each year the little seedlings and the humus on the forest floor. Erosion of the land soon follows, with the result that the water runs off rapidly, forming gullies, and becoming turbid and unsuitable for domestic purposes.

Reforestation Practical and Simple

While the general cost of reforestation work should not exceed more than \$10 to \$15 an acre, it costs from \$20 to \$30 an acre in the southwestern Pennsylvania district, because of the higher price paid for labor in industrial sections.

Usually the little seedlings are set out 4 by 4 feet apart, which requires about 2,700 to the acre, but alternate trees can be removed within a decade if so desired and some revenue derived to charge off against the initial planting expense. The only tools needed for the work are a number of ordinary wide-bit mattocks and wood mallets. The seedlings are placed in buckets half filled with water, to which clay is added un-

which cannot withstand the shock of transplanting so well. Suitable seedlings for reforestation work can be obtained for planting in Pennsylvania from the State Department of Forestry, the Legislature having passed a law authorizing the department to do this. That private planting in Pennsylvania is going forward by leaps and bounds is indicated by the fact that this department has so far distributed free of charge for private planting in the state 9,041,870 little seedlings.

In addition to reduction in the initial planting expense thru the free distribution of seedlings by the State Forestry Department, the cost can be further decreased in the case of municipally-owned water-sup-



THREE-YEAR SEEDLINGS FOR PLANTING

til the mixture becomes slightly thick. This is done to prevent the small roots of the trees from drying out during the planting operations.

The mattockmen are started out in a row, keeping about 4 feet apart and making the holes for the seedlings. One planter with a mallet follows each mattockman and plants the tree, being careful to set it tight enough so that a slight pull will not remove it. A "dropper" can handle the seedlings from three rows, his business being to drop one tree in each hole after the mattockman and to see that the buckets are kept filled.

Seedlings from two to three years old are usually employed in this work, better results being obtained than with larger seedlings,

plies by the employment of public-spirited citizens and Boy Scouts to do the actual planting. This was done in Altoona, Pa., where the city officials arranged all the details, which included automobile trucks to transport the party to and from the city's watersheds, and plenty of good things to eat.

There is nothing so essential to the welfare and growth of a city or municipality as good water and lots of it, and this can be assured only thru proper protection and care of the watersheds. Municipally owned water-supplies and those under private control are gradually coming to a realization of this fact, and it is certain that there will be much greater activity along this line within the next decade.

Garbage Collection in a Small Canadian City

Comparative Costs and Savings by the Use of a Motor Truck

By H. Wm. Meech

Commissioner of Public Works, Lethbridge, Canada

LETHBRIDGE is a city of about 13,000 inhabitants in the southern part of the province of Alberta, Canada, about 48 miles north of the international boundary.

The city is the center of a large irrigated as well as dry farming area and is built on a bed of coal along the curving banks of the Old Man River. The city has a liberal allowance of parks and is not very thickly built up, and for these reasons is scattered over a large area. This means very long hauls of garbage for a city of this population, some portions of the outlying residential districts being fully three miles from the dump.

The garbage is dumped over a steep cliff on the extreme west end of the city and is kept continually burning. Until early in 1918 the collection outfit consisted of five single-horse dump-carts. With the long hauls and the slowness of the horse-drawn carts, garbage collection was not on an effi-

cient basis and numerous complaints were received.

Early in 1918 the situation was seriously considered by the city commissioners, and as a result of their deliberations a 2-ton truck with an hydraulic lift for dumping was purchased. This was an excellent move, but it soon developed that in order to bring about the desired results scientific handling of the collection system was necessary.

The author went carefully into the question of getting the most possible work out of the truck, and it was evident that, while it was not capable of taking the place of the complete old outfit of five horses and carts, it could take the place of four. The object in view was to give the compact business district a daily collection service, some smaller outlying stores and apartment houses a service every second day, and the whole of the residential districts a weekly



THIS TRUCK READILY REPLACED FOUR OF THE FIVE HORSE-DRAWN GARBAGE COLLECTION WAGONS IN LETHBRIDGE, ONTARIO, CAN.

service. This was a better service than had ever been attempted before.

The truck was obviously most economical for long hauls, and fortunately the business district was fairly near the rubbish dump. A single horse and cart was therefore put on the short hauls to give the business district a daily service, and all the longer hauls were taken care of by the truck. Outside the area of collection by horses the city is divided into six districts and each district is covered daily by the truck. The day's work is so arranged that where more than a daily collection is necessary in the truck district the truck can take care of it.

It has been fully demonstrated that a reliable auto truck collecting system is far more economical than horse-drawn vehicles, but the importance of systematic routing cannot be overestimated. This is particularly true of long hauls.

Following is a comparison of the costs of two periods, the first before the truck was operated and the second showing a year's truck service:

	Wages	Stables	Supplies	Office Supt.	Total*
July, 1917, to June, 1918.....	\$3,085.49	\$8,782.28	\$ 492.38	\$511.00	\$12,871.15
July, 1918, to June, 1919.....	4,960.82	3,975.59	1,314.62	365.00	10,616.03

*The total figures in both periods include the emptying of earth closets, an amount estimated at over \$7,000 annually.

In comparing these figures it should be remembered that wages have been increasing over the entire period, and the item

of wages for the first period if the old system had been retained would have amounted to \$4,936.68, also the item of stables would have been changed by the increasing price of horse feed, etc., and the total cost if the old horse system had been retained would have amounted to \$14,051.64, making a comparative total difference and saving in cost of \$7,121.65 instead of \$2,254.12.

The area covered by auto truck is about six square miles, and the area covered by the horse and cart is about one-half a square mile. The average weight per load by the truck is 3,150 pounds.

All residents are requested to put their garbage in cans or other receptacles that can be lifted easily. The necessary co-operation on the part of the citizens has been accorded the authorities. Two men, besides the driver, ride on the truck, to lift the garbage.

If we had continued the old horse-and-cart service, the difference in cost for one year would have been more than the cost of the truck. We are giving better service

with the truck than was possible by the old system, and we have eliminated practically all complaints.

COST PER LOAD FOR THE MONTH OF AUGUST, 1919, FOR AUTO TRUCK AND HORSE AND CART

	Cost per Mile (593 Miles)	Cost per Load (121 Loads)	Cost per Hour (206 Hours)
Gas	\$0.0950	\$0.4660	\$0.2730
Oil	0.0195	0.0960	0.0565
Repairs	0.0275	0.1350	0.0800
Driver and help.....	0.7170	3.5150	2.0650
Total	\$0.8590	\$4.2120	\$2.4745

Horse and cart, cost per load (213 loads), \$0.965; total cost, \$205.60.

On the Calendar of Conventions

FEBRUARY 16-17.—NEW YORK CITY.

National Association of Retail Secretaries. Annual convention. Secretary, T. M. B. Hicks, Jr., 177 Milk Street, Boston 9, Mass.

FEBRUARY 22-28.—CLEVELAND, OHIO.

National Education Association—Department of Superintendence. Annual meeting. Secretary, Miss Charl O. Williams, Superintendent of Schools, Memphis, Tenn.

MARCH 5-6.—BAY CITY, MICH.

Michigan Commercial Secretaries' Association. Semi-annual meeting. Secretary, C. W. Otto, Board of Commerce, Pontiac, Mich.

MARCH 10-12.—SASKATOON, SASK.

Saskatchewan Association of Rural Municipalities. Annual convention. Secretary, E. G. Hingley, Regina, Sask.

MARCH 20-27.—BELLINGHAM, WASH.

Washington Association of Commercial Organi-

zation Secretaries. Semi-annual convention. Secretary, A. F. Marsh, Chehalis, Wash.

APRIL 12-17.—HOT SPRINGS, ARK.

United States Good Roads Association. Annual convention. Secretary, J. A. Rountree, Birmingham, Ala.

APRIL 14-21.—NEW ORLEANS, LA.

National Conference of Social Work. Annual meeting. General Secretary, William T. Cross, 315 Plymouth Court, Chicago, Ill.

APRIL 19-21.—CINCINNATI, OHIO.

National Conference on City Planning. Annual conference. Secretary, Flavel Shurtlett, 60 State Street, Boston, Mass.

APRIL 27-29.—ATLANTIC CITY, N. J.

Chamber of Commerce of the United States of America. Annual meeting. General Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

Modern Sewage Disposal Plant at San Angelo, Texas

Activated Sludge Process Operates Satisfactorily in Close Proximity to City Park

SAN ANGELO, Texas, is a city of 15,000 inhabitants, and is located at the confluence of the North and South Concho Rivers in Tom Green county, in the western portion of the state. The larger and more important portion of the city, including the business district, is served by a sewer system thru which the city's sewage was formerly conducted to two septic tanks, now outgrown, thence into the river. To comply with the laws of the state covering the disposal of sewage into streams, a modern sewage disposal plant was recently constructed, having a capacity for treating 400,000 gallons of sewage per day; the present production of sewage is estimated at 225,000 gallons per day, so there is ample surplus capacity to care for the growth of the city for a long period of years.

On account of the unfavorable topography of the city and its environs, it was necessary to locate the sewage disposal plant upon the bank of the river, less than a thousand feet from the main street of the city, and adjoining the city park. On account of the proximity of the site to human habitations, the activated sludge method of sewage treatment was decided upon, because a plant of the character necessary for the operation of this method of sewage treatment produces no appreciable odor and is not unsightly, as is the case, more or less, with the plants required by most other methods of sewage treatment. The plant is unique in that the two old septic tanks referred to were utilized, which effected a large saving over the cost of an entirely new plant and enhanced its efficiency to a great extent.

The old septic tanks were 20 feet wide, 8 feet deep, and 110 and 60 feet long, respectively. The concrete top was removed from one-half of the longer tank, and this uncovered portion was converted into an aeration chamber, with channels having V-shaped bottoms. A concrete partition was constructed between the covered half of the tank and the aeration chamber, having square openings near the bottom, to allow



A SECTION OF THE ACTIVATED SLUDGE TANKS AT SAN ANGELO, TEXAS

the sewage to flow from the covered department to the aeration chamber.

A settling chamber having a hopper-shaped bottom was constructed adjoining the aeration chamber. This settling chamber is 18 feet wide, 20 feet long (the direction of flow of the sewage) and 25 feet deep. Concrete baffles are so constructed as to cause the sewage to flow downward upon entering the chamber, then upward and across, under a concrete scum board. Adjustable weirs control the even distribution of the flow of sewage into and out of the settling chamber.

Air, under 5 pounds pressure, is supplied to the aeration chamber by a positive pressure blower. This blower has a capacity for delivering 400 cubic feet of free air per minute. The blower is actuated by a 15-horsepower crude-oil engine, belted to a counter-shaft, which, in turn, is belted to the blower. The air is distributed in the aeration chamber thru a system of perforated pipe grids, suspended near the bot-

tom of the V-shaped channels. This method of diffusing the air thru the sewage was adopted on account of the initial low cost and because the plant was not to have skilled attention, the pipe grid being simple to take care of.

Two features of the plant contribute particularly to the efficiency of its operation. One is the fact that the raw sewage flowing into the plant has a period of detention, in the closed septic tank, of three hours, which is sufficient to relieve it of a large proportion of its solid contents. As the amount of air required for aeration is proportional to the quantity of solid contents of the sewage, it will be seen that in just that proportion in which the sewage is relieved of its solids is the consumption of air reduced.

The other feature is the method of handling the night flow of sewage. There being no factories in San Angelo, the night flow of sewage is quite small (30,000 gallons' average). This night flow is diverted into the other septic tank, and the operation of the plant is ceased for the night. On starting the plant each morning, air from the blower is turned into an ejector, which transfers the sewage from the septic tank into the aeration chamber uniformly thru the day.

Approximately 25 per cent of the sludge accumulating in the settling chamber is returned to the aeration chamber to keep the sewage "seeded." When an amount of sludge has accumulated sufficient to require its removal from the settling chamber, it will be carted away and used for fertilizer.

No analyses have been made of the chemical composition of the activated sludge, to determine its value as a fertilizer, as there will not be enough of it to be of commercial importance. The sludge collecting in

the septic tanks will probably not require removal for several years, at its present observed rate of accumulation.

The sewage flowing into the plant is an average domestic sewage; the effluent produced by the plant is clear and sparkling and compares favorably, in appearance, with good drinking water. It has a slightly musty, tho not offensive, odor, as it comes from the plant; this odor soon disappears, however. While no bacteriological tests have been made, satisfactory stability tests have been made with the methylene blue method, indicating that the effluent is well within the requirements of the Texas stream anti-pollution law.

As well as records can be kept in a plant operated by intelligent, tho unskilled, attendants, it is indicated that one cubic foot of free air is required to aerate each gallon of sewage. The cost of operation of the plant, not including interest and depreciation charges, is, in round figures, \$3 per day. The lowest bid received for the construction of the plant, that is, for the new construction, was \$6,600.

The plant is ruggedly constructed, and is as nearly automatic in its operation as was possible to make it. Skilled attention is not required for its practical operation, as the designers will visit it from time to time to see that it is operating satisfactorily.

The San Angelo sewer system is owned by the San Angelo Sewer Company, a private corporation; the sewage disposal plant was designed by the Henry Exall Elrod Company, general and consulting engineers, of Dallas, Texas, and was constructed by force account by the San Angelo Sewer Company's superintendent, Patrick E. Dooley, under the direction of the engineers.

The Health Officer's Position in the Community

The health officer's position, however little it may be buttressed by precedent, is of scarcely less importance than that of the judge. Officially, however, he takes no thought of property as such; he deals in human values alone. His function is to see that all—the least as well as the greatest—are safeguarded against anything that

tends to imperil health and shorten or render precarious their days. Life is his stock in trade. He operates before the event in order to forestall it. The causes of disease and death are the objects of his attack, and his efficiency is best shown by the absence of communicable disease within the territory under his jurisdiction.

Protecting Iron and Steel Stand-Pipes From Corrosion

By Charles W. Sherman
Consulting Engineer, Boston, Mass.

THE proper maintenance of an iron or steel stand-pipe involves periodic painting to prevent corrosion, which would weaken and ultimately destroy the structure. The protection of the exterior surface involves no particular difficulty, as it can be inspected at any time, and the coating can be replaced whenever it may appear necessary or desirable. A paint coating on the outside surface of the stand-pipe is subject to practically the same conditions as one on a bridge or a building. The interior surface is, however, difficult to protect, being constantly in contact with water. Moreover, it can be inspected only at intervals and with some difficulty, and it is often difficult or impossible to leave the stand-pipe empty for a sufficiently long period to clean and paint the surface in the most desirable way.

The durability of a protective coating on the interior surface of a stand-pipe is dependent not only on the qualities of the coating itself, but also on the character of the plates to which the coating is applied (whether wrought iron or steel); the cleanliness, dryness, and temperature of the surface when the coating is applied; the character of workmanship; the character of the water; the amount of ice formation in winter; and fluctuations in the water level.

Data relative to the conditions existing when coatings were applied have comparatively seldom been made a matter of record. Indeed, it is more often than not the case that the kind of paint and the quality used are not recorded. Consequently, the amount of definite information obtainable, even by extended inquiry, is comparatively limited, and much of it is of doubtful value.

In an attempt to bring together such information as may be obtainable relative to actual experience with stand-pipe paints, inquiries were sent to water-works in the northern and eastern parts of the United States where iron or steel stand-pipes are in use, requesting information as to the dates of painting, kind of paint used, prepa-

ration of the surface for painting, and other significant data. In general, the water-works superintendents were generous with their responses, which were received during the winter of 1916-17, but in a disappointingly large number of cases the responses were, in effect: "The writer has been here but a short time. The former superintendent left no records and I do not know what paint was used or when it was applied."

The data were not susceptible of being summarized or averaged. In a few cases it was noted that the stand-pipe had not been painted since erection. There are doubtless cases in which the quality of the water is such that it protects rather than corrodes the metal. Such cases are, however, rare, and experience seems to indicate that as a rule an iron or steel stand-pipe should be thoroly cleaned and painted inside, at least as often as once in four or five years. Perhaps, however, if the cleaning were as thoroly as would be accomplished by means of the sand-blast, and if a protective coating were then properly applied, the interval between paintings could be materially extended.

Most of the paints used were undoubtedly proprietary articles, and, altho one red oxide of iron paint showed "good" or "very good" results, several others characterized the same way in his tabulation gave "bad" or "very bad" results. It is to be noted, too, that red lead when used was employed only in the first coat, yet the results were characterized as "good" or "very good." It is not impossible, therefore, that two or three coats of red lead would have shown better protection than any of the other paints.

A. H. Kneen, Philadelphia, Pa., painted two stand-pipes with vertical stripes of different kinds of paint, and observed the conditions after two or three years of service. The only paints which gave reasonably good service were a red oxide of iron paint and red lead.

The engineers of the Metropolitan Water-Works, of Boston, have adopted the policy

of cleaning the steel by sand-blast and applying three coats of red lead to the interior surface of their steel stand-pipes. The following quotation from the fifteenth annual report of the Metropolitan Water and Sewerage Board describes the cleaning and painting of the Bellevue Hill stand-pipe:

"On March 25 the tank was taken out of service and drained, and the work of sand-blasting and painting the steel was begun March 30 by the W. L. Waples Company of Boston, subcontractor for this work. The plant used consisted at first of a 20-horsepower gasoline engine-driven air compressor, a compressed air reservoir, two lines of air hose and two nozzles. Sand-blasting was stopped in the latter part of the afternoon of each day, and the cleaned surfaces were painted before rusting commenced. The force employed included 1 foreman, 2 painters, who also did sand-blasting, and 1 helper. This force could sand-blast and paint an area of about 330 square feet per day. In order to increase the rate of progress, a second compressor, operated by an automobile engine, was installed on April 19. The entire inside and outside surface of the tank, having an area of 35,650 square feet, was sand-blasted and painted. Work was completed June 14, with the exception of the third coat on the outside, which has been deferred until after the masonry tower which encloses the tank is completed. All painting materials were furnished by the department, but were mixed by the contractor under the direction of the engineer. For the inside of the tank, National Lead Company's red lead in oil paste, litharge, and Spencer-Kellogg & Son's boiled linseed oil, were used: the first coat natural color, the second and third coats tinted with lampblack in oil. For the outside of the tank, red lead paste, raw linseed oil and drier were used for the first coat, and for the second coat white lead, raw linseed oil, turpentine, and drier tinted with lampblack were used. One gallon of red lead paint was sufficient to cover 700 square feet of surface with one coat. The subcontractor's price for sand-blasting and painting the tank was \$1,600."

The author believes that the method just quoted represents the best practice of the

present time. He would put especial emphasis on the thoro cleaning of the metal, and the *immediate* application of the paint to the cleaned metal before the latter has cooled and moisture has condensed upon it.

The following quotation is pertinent in this connection:

"Every specification for painting bristles with clauses prescribing what shall or shall not be done, and still the fact remains that there are more failures than even indifferent successes, especially on work painted at the shops before shipment. The causes for the irregular and indifferent results are not difficult to ascertain. They are the improper application of the paint to dirty, greasy, moist or chilled, rusty or mill-scaled surfaces. No marked improvement in these uncertain results can be had until the same importance is attached to the 'paint question,' not only on paper, but in the actual supervision of the painting in all of its stages, as is given to the minutest construction details."*

With regard to the coating to be applied to the metal after cleaning, it appears probable that not only red lead, but several of the graphite and red-oxide-of-iron paints, and perhaps certain enamel-like coatings, will give satisfactory protection. From such information as he has, the writer believes red lead to be the best. It has been used for many years for painting the bottoms of steel and iron ships, and has given the best satisfaction of any paint used for that purpose. No other substance has been put to such severe trial and shown so good results; but, unfortunately, the use on stand-pipes has been comparatively limited—probably because of a lurking, but unfounded, fear of lead poisoning if the water remains in contact with red lead paint.

ACKNOWLEDGMENT.—From a paper read at the Albany convention of the New England Water Works Association.

* "Rustless Coatings," by M. P. Wood. (New York, John Wiley & Sons, 1904.)

Building the City of To-morrow

When we build, let us think that we build forever. Let it not be for the present delight, not for present use alone. Let it be such work as our descendants will thank us for, and let us think, as we lay stone on stone, that a time is to come when those stones will be held sacred because our hands have touched them, and that men will say as they look upon the labor and wrought substance of them, "See! This our Fathers did for us."—JOHN RUSKIN.

Salary Standardization Depends on Accurate Classification

By R. O. Beckman

Assistant Director, Congressional Commission on Reclassification of Salaries

THE "classification" of civil employes for purposes of salary standardization and selection is the prefatory step in solving the municipal employment problem. This problem in its broad sense—the intricate problem of selecting, holding, and adequately rewarding a competent personnel for the efficient rendering of public service—is the most important one confronting every municipality.

Let us consider why this must be so. Except for funds expended for public works, or, more accurately, for the acquisition of physical properties, the labor cost in public employment, as on private industry, is the largest item in the budget. Hence it is obvious that the administration of a city may succeed or fail according as its funds for personal service are spent. One of the best safeguards for the efficient expenditure of salary funds is, of course, adequate civil service machinery. The important point at issue, however, is that every municipal administration, with or without the assistance of the merit system, must make efficient use of its salary appropriations if it is to be continued in power. The unusual rise in wages is peculiarly embarrassing to our civil establishments. The funds at their disposal are frequently inadequate to meet the cost of material equipment, not to mention the growing salary needs of employes seeking to cope with the mounting cost of living.

These are some of the reasons why a sound and comprehensive employment program must soon be evolved for every municipality. In the field of private enterprise, emphasis has definitely shifted from production and material costs to the problem of personnel. In public as in private employment, each employe should receive a reward commensurate with his responsibilities and efficiency; he should do work for which he is best qualified; he should see and enjoy the results of his work; and he should work in an environment in which he can do his best.

In order that these ideal conditions may

be fully realized in the administration of any municipality, its employment program must provide:

1. A classification of employes on the basis of similar duties, responsibilities and qualifications
2. Standardization of compensation, thus awarding equitable standard rates of pay to all employes within each of the classes set up
3. Practical and scientific methods of selection and appointment, based on recent industrial and military experience
4. A system for training new employes and those qualified for advancement, and of advancing their pay on a basis of increased proficiency and usefulness
5. The installation of a basis for measuring, and of a system for keeping individual efficiency records of employes

Other factors which go to make up a comprehensive employment scheme are the policy of "promotion by merit only," a system for removing inefficient or unnecessary employes, a plan for pension, or superannuation retirement, the establishment of proper working conditions and of a means for the settlement of disputes between the management and the employe.

Need for Preliminary Classification

Scarcely any of the more important phases of an employment program can be considered without a preliminary classification of employe and a concurrent standardization of salaries. The first records gathered by the employment manager of a large corporation are the "job specifications" descriptive of the kinds of positions for which he must select employes. Without them he would not know what qualifications to demand of those seeking work, nor could the management determine equitable rates of pay as between different kinds of employment. Job analysis and the classification of personnel are just as important, and more so, in the public service. In addition to furnishing a sound basis for the selection and just compensation of employes, the classification paves the way for studies in efficiency and economy in organization,

does away with administrative confusion by providing a uniform nomenclature for designating positions, and provides an extremely helpful instrument for the common council in considering appropriations.

Modern practice in the classification of civil employes dates from 1909, when the city of Chicago made the first serious effort in this direction. It was followed by New York City, Pittsburgh, Milwaukee, St. Louis and Oakland, and by a few state governments, led by New Jersey. Canada has just completed a modern classification, while Australia and New Zealand have had theirs for a number of years. Without the introduction of a modern classification scheme into the Army job specifications, trade tests, and efficiency ratings, no coördination of effort would have obtained. While the Army program could manifestly not be applied to municipalities, it illustrates the importance of personnel classification.

Federal Positions in District of Columbia Now Being Classified

One of the largest classification jobs ever undertaken is now in progress in Washington, where a joint commission of Congress is engaged in classifying approximately 107,000 federal positions within the District of Columbia. The Commission has built up an organization of approximately 100 employes, including classifiers, investigators and editors.

Thru the use of questionnaires and supplemental reports it has obtained a complete record of the positions in the federal service, the work performed in each and the qualifications required. The Commission

expects to present its classification and report next month, covering upwards of 1,500 individual, distinctive kinds of employment or "classes" within the scope of the survey.

Eight thousand employes of the municipal government of the District of Columbia, embracing a wide variety of occupations, are included within the classification.

The "specifications" for each class will include a statement of the duties, of the qualifications, of suggested lines of promotion from class to class, and of the salaries recommended. The class specifications are, of course, absolutely essential in order to have a defensible basis for salary standardization. They will furnish the U. S. Civil Service Commission with a classification of positions long needed in connection with the selection and appointment of government employes. They will be of great value to municipalities in considering classifications. Many incidental recommendations relating to the component factors of the employment problem previously referred to will probably be made by the Reclassification Commission.

A number of cities and states are contemplating personnel classification as a result of its demonstrated necessity in eliminating wastage in the municipal salary budget and in meeting the problem of the employe's increasing family budget. It is probable that the next few years will see many municipalities awake to an appreciation of the importance of efficiency and economy in the administration of employment problems, and of classifying their employes.

The Tale of the City Official

Once upon a time there was a young man who, having read his Plato and his Aristotle, decided with Pope that "the proper study for mankind is man." He therefore entered the service of his home town and for twenty years he worked hard and studied, in return for a wage about equivalent to that of a steam-fitter's helper. At last his efforts began to bear fruit; his dreams of community service materialized in the form of a great municipal undertaking destined to bring comfort and happiness to his fellow citizens. He persuaded

the city solons to authorize the undertaking and at last the work was under way. So the man—no longer young—went forth upon the city streets to stretch his tired limbs and forget the cares of office. As he rested in the public park he overheard the idle talk of several fellow townsmen and the talk was concerning his great undertaking. He knew the work was good and so he listened, and this is what he heard about himself: "Clever duck! Wonder how much rake-off he got."—*From New York Municipal Reference Library Notes.*

Community Back Yards as Community Assets

By D. M. Blanding

Clerk and Treasurer, Sumter, S. C.

WHAT shall we do with the unsightly back yards in our cities and towns? How can we convert them into community assets? All the community undertakings which are herein proposed are capable of an almost infinite variety of adjustments to fit local conditions.

The average city block in our section of the country measures from five to six hundred feet in depth and width, and may accommodate as many as twenty to forty dwellings, housing from one to two hundred people. These city squares furnish the unit for coöperative effort looking to economy and the building of community spirit. The abutting back premises and garden lots of the houses under ordinary prevailing conditions contain an unsightly patchwork of division fences and odd sheds and outbuildings. Many of the sheds, now devoted to individual family uses, could be carted away or demolished, and community outbuildings substituted. The division fences could be realigned so as to form a central community square for a garden, a wash shed, a central heating plant, a kitchen or other community conveniences that might prove practical. Upon this central community square would open gates from the back yards of the various residences. Individual rights of ownership in the land devoted to the community square could be protected by the making of plats, the placing of stakes, and the paying of rentals to individual owners in proportion as the land of each was used.

On this community back square might be located one or more of the following:

1. A wash shed equipped with an electric-power washing- and wringing-machine of capacity adapted to the needs of the square, connected to the city water-mains and discharging into the city sewer or drainage system. There should be facilities for heating the water and for starching and ironing. With such an equipment one capable woman could probably take care of the wash of all the families on the square, whereas the present system of individual washes with the primitive wash-tub methods might require from ten to fifteen washerwomen.

2. A community garden to furnish the families of the square with flowers or fresh vegetables and berries. This would be looked after by a man, with arrangements for individual members of the families to work in leisure hours if any should desire to do so.

3. A community kitchen to supply the families with staple meals, which could be supplemented by special dishes cooked by the families themselves on their own gas ranges as their desires might dictate.

4. A community heating plant with steam pipes radiating to the dwellings on the square.

5. A community rose garden.

As an alternative proposal for turning the back lots of town and city squares to domestic purposes, they might be turned into playgrounds for the children of the families on the square.

Such a plan would keep the children off the streets and relieve the minds of the parents from anxiety as to accidents from traffic. The children would at all times be within easy reach and have a safe place in which to romp and play.

The initial expense would be practically the only cost, and the profits would be appropriated by the children themselves, in increased health of body and mind, and would not be the source of quibbling jealousies on the part of the elders. Parents, too, will often do things for their children that they will not do for themselves, and it may be that the dividends realized in sturdy childhood would outweigh in their minds the material advantages that might accrue to them as a result of any of the alternative coöperative domestic undertakings. The start would be inexpensive, involving merely the realignment of the fence lines to afford an open square with gates opening upon it from each family's back premises, and the purchase of some simple apparatus. The purchase of the playground apparatus could be arranged for by assessments unanimously agreed upon or by voluntary contributions.

All the projects which have been presented would achieve the beneficial results of getting rid of the unsightly back yards and of fostering community spirit and neighborly friendliness.

The Transportation Ally in Municipal Progress—The Motor Truck



TWO AUTOCARS USED BY THE STREET DEPARTMENT OF THE TOWN OF BROOKLINE, MASS.

The use of motor trucks in middle- and long-distance hauling for the collection of municipal refuse is very general. Garbage and ash collection and the removal of street refuse is one of the problems of the day. While horse-drawn wagons or electric trucks are believed by many to be more economical for very frequent starting and stopping, there is no doubt that gasoline-driven motor trucks are the best for the longer hauls with few stops.



A TIFFIN MOTOR FLUSHER EQUIPPED WITH GOODRICH TIRES, USED BY THE STREET DEPARTMENT OF SEATTLE, WASH.



A FOUR WHEEL DRIVE MOTOR FIRE TRUCK USED BY THE CITY OF CLINTONVILLE, WIS. ONE OF THE CHIEF ADVANTAGES OF THIS PIECE OF APPARATUS IS ITS ABILITY TO OVERCOME PRACTICALLY ALL TRAFFIC OBSTACLES IN CROSS-COUNTRY RUNS



AN AMERICAN-LA FRANCE COMBINATION PUMPER AND CHEMICAL USED AT LAKEWOOD, OHIO

The above illustration shows the pumper throwing four small fire streams. The pumper is working at the end of a 1,150-foot line with hydrant pressure of 40 pounds. A fifth stream could be thrown from the chemical tank. This engine is particularly adapted for suburban use where residences are set back long distances from the street and from available water-supplies. It can be used at a cistern or well, or if these are not available the 2½-inch suction can be thrown into a barrel and a bucket brigade formed to keep the barrel filled, and one or more 1-inch lines can be used very effectively.

The Municipal and Coöperative Housing Law in Wisconsin

IN July the Wisconsin Legislature added a section to its general corporation law which made it possible for municipalities to engage in housing and for interested individuals to organize themselves to form coöperative housing companies.

Under the law in question such a corporation is given power to acquire land and to prepare it for residential use upon approval of any public land commission or city planning commission of any locality where the property of such corporation is located. It is also provided that if the land is located within any city or within a radius of three miles from the boundary of the city, approval must be had from the health department for the development of the land. No single dwelling, the cost of which exceeds \$5,000, may be erected by such company. Sufficient ground space must be provided to furnish sufficient air and light.

The clause of the act which makes coöperative housing possible is that clause which directs that no land shall be sold by the corporation except in case of winding up the affairs of the corporation or in closing mortgages or liens, or for disposing of land not needed by the corporation. Two other provisions indicate further the truly coöperative character of the corporation. No lease may be made for land or property of the corporation except to a stockholder of it and for the use of such stockholder. In this instance exception is made in the case of American soldiers, sailors or marines in the war between Germany and the Entente, who need not be stockholders of the corporation. No tenant may hold stock of the corporation beyond the value of the premises occupied by him. All stock must be issued in consideration of money, labor, or property estimated at its true money value. No dividends may be declared until a fund equal to 2 per cent of the authorized capital of the corporation has been created, and no dividend exceeding 5 per cent of the par value of the stock may be paid to any holder. The preferred stock of the corporation must be retired as soon as possible. For this purpose 10 per cent of the annual profits is set aside each year.

By providing that the common council of any city and the board of supervisors of any county may subscribe for preferred stock of the corporation in question, opportunity is offered for those governmental units to engage in the housing of wage-earners.

The directors of the coöperative housing corporation are not to receive any compensation until the surplus fund of 2 per cent of the capital has been set aside and until dividends on preferred stock have been paid. At no time is the compensation of the board of directors to exceed \$500 per annum. No fee for filing articles of incorporation by a housing corporation formed under the provisions of this law is required. This puts any housing corporation organized under the act on the same standing in that respect as educational, benevolent, and charitable corporations.

The coöperative housing law outlined above is probably the first specific coöperative housing law passed by any state in the Union. It is not unlikely, however, that coöperative housing companies may be formed under some of the general coöperative acts which are in force in some states.

The Wisconsin act has been secured by the urgency of the Milwaukee Housing Commission, whose report was filed in April, 1918. The original draft of the law was drawn by members of that commission. In its report to the Mayor of Milwaukee, the commission said, among other things:

The solution of the housing problem involves:

(a) The elimination of speculative land values in some residential districts

(b) Zoning of the city to safeguard all residential districts

(c) Economical and adequate planning of streets, transportation, sewage disposal, water-supply, lighting, planting of trees, etc.

(d) Elimination of waste in construction of homes

(e) Acquiring for wage-earners the benefits of ownership without interfering with labor mobility

(f) Legislation aiming to stimulate the erection of wage-earners' homes

(g) Public instruction as to the possibilities of housing betterment

The Elimination of Speculative Land Value

The unearned increment of land value is held to be one of the chief causes of city slums, and its control by the Government seems to be, among others, a logical and necessary expedient to check physical and social deterioration incident to improper housing. Increasing values of land gradually restrict the size and quality of homes to a level inconsistent with the higher ideals of democracy, and, therefore, private housing enterprises have not more than set an example which speculative builders cannot afford to follow. To-day speculative building methods are almost exclusively resorted to for providing wage-earners' homes, and the chief evidence of the failure of such procedure lies in the fact that either housing evils exist in almost every community or are imminent. Uncontrolled speculation in this field is so closely akin to exploitation that to favor its continuation is to propose that workmen may, with propriety, be exploited.

Experiments in Europe seem to indicate that the most effective method employed to eliminate the burden of speculative land values is that of encouraging municipal ownership of large tracts of land which may be leased to and eventually purchased by properly constituted copartnership home-building societies. In the main, the various schemes adopted aim to extend to home-seekers the credit of the Government without imposing additional burdens on taxpayers, for to be of value to the community housing projects must be self-supporting. It is reasonable to assume that similar methods would assure to industrial workers in this state the benefits accruing to European

workers, and your commission recommends that such legislation be enacted as may be necessary to accomplish the desired results. The Commonwealth of Massachusetts has taken an initial step in this direction, and it seems proper that Wisconsin should do likewise.

Americans have long harbored the idea that ownership of his home makes a man a better citizen. This is a misconception unless the benefits of such ownership outweigh its burdens. It must be borne in mind that ownership with most wage-earners means the carrying of a mortgage, with the constant fear of foreclosure. It also means a very restricted area in which employment may be sought.

Copartnership tenant societies, as organized in Europe, grant to the tenants practically all of the benefits of individual ownership without the usually accompanying burdens. Sixty coöperative societies in England, and more in Belgium and Germany, have placed the method beyond the experimental stage, and its adoption in this country seems advisable. In a copartnership society the occupant of a home neither buys nor rents in the usual meaning of those terms. He acquires the value of a home without curtailing his mobility, as his investment in the society's stocks, if not always transferable without loss, will at least net him as much income as any safe security. His savings are not lost should he find it expedient to remove to another locality. The interests of tenant and investor are identical. No member lays claim to ownership in one house; he lays claim to part ownership in the whole estate.

ACKNOWLEDGEMENT.—From the *Monthly Labor Review*.

Paris Obtains Site for Remarkable Park

The French Parliament is authorizing the demolition of the wall of Paris and the cession of the site and the military zone just outside the wall for city improvements. It has provided the opportunity for the development of one of the most remarkable parks in the world. With an average width of 250 yards and a length of 25 miles, the park will completely surround the city, adding one more to the circular systems of improvements that have taken the place of the city walls in successive improvements. The demolition of the wall will release 1,150 acres of ground. Three hundred

of this will be devoted to new streets, boulevards, railroads and canals. The military zone will make available 1,875 acres, of which all but 125 will be devoted to the new park. This space will be utilized for the erection of a permanent exposition building. A small portion of the wall will be preserved as a historic monument. With this improvement sixty "gates" of Paris will be eliminated and the physical line of demarkation which separated the city of Paris from the neighboring communes will, to a large extent, become a connecting link instead of a barrier.



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Teaching Safety in the Public Schools

By Dr. E. George Payne

Principal of Harris Teachers' College, St. Louis, Mo.

EVERY constructive social program expects education to make the child master of the situation in life that he is facing now during his school career, and thus make him master of the gradually growing complex conditions that he will face in his later life in the business and social world.

This conception fits perfectly into our program of education in accident prevention. Who is most concerned in the preservation of life and limb and in the mastery of accident situations? We adults are inclined to assume that we are the only ones who are really concerned with the welfare of children, but the fact is, the children themselves, under the instincts and feelings of self-preservation, are most concerned about their own welfare. The trouble is that the child, because of his limited experience, does not know the dangers nor the value of mastery over accident situations. He does not see danger, because in his experience he has never been brought into the presence of it, and what therefore appears to be carelessness on his part is merely ignorance or innocence.

The Child Must Learn Thru His Own Experience

Scarcely a day goes by in which some enthusiastic layman—an astute business or professional man—who is interested in safety, does not instruct me as to just how we ought to teach safety in the schools. The professional men generally advise that we have skilled adults write plays, speeches, and articles. Then they would have these memorized and given by the children, or perhaps read to the children by the teachers. The advice of the business group is fundamentally similar to this, but it takes a little different turn. They would have men and women from the city, more or less interested in accident prevention, brought into the schoolroom to give lectures on safety. The persistency with which people of the best intentions pursue this policy leads me to discuss briefly why this method, altho satisfying the layman that his duty

is well performed, even in the face of mounting accident fatalities, is worthless as a vital educational policy. In the first place, children do not bring to these adult productions the experience necessary for their interpretation and understanding; and, in the second place, accident prevention is largely a matter of habit, and habits are not formed by talks about safety or by adult actions of any kind, but by the actions of the children themselves.

There is such a satisfaction in talking and making speeches that the illusion is common that what we say takes effect in the action of others. It would be a fortunate disillusionment for a speaker to a class of children to follow them for twenty-four hours after his speech and see how many times they violate everything suggested, and how infrequently they follow his advice. To men working with machinery, the presentation of a picture showing an accident, or of a talk showing the cause of accidents, takes instantaneous effect, because the observers or hearers immediately visualize from their own rich experience the consequence of the accident to themselves and their families. The children do not visualize from their experience, because they have had no experience with accidents. The child must get the experience, and he can do this only thru his own action, and not the action of others. He must make his own plays, he must tell his own stories, real or imaginary; he must gather his own data in newspapers or magazines or by observation, so that he will have not only a determination to avoid accidents, but to cause others to avoid them. In a word, if we wish to affect the child's conduct we must give him real experience and not talks, plays, and stories written by adults.

The second problem in safety instruction is the formation of habits. Statistics are plain in that respect. Accidents are most frequently caused by bad habits. We are run over by a street car or an automobile because we have not formed the habit of crossing streets at the corner or looking in

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both directions before crossing a street. The duty of the school is to form right habits. Every parent knows how habits are formed in children. Picture a fond father or mother talking to a six-year-old child once a week, or perhaps once a month, and then expecting him to acquire correct habits of speech, table manners, and conduct in general! Correct habits of action in children are purchased by eternal vigilance, and correction whenever the situation arises. If the child eats with his knife we give him a fork and see that he uses it and keeps on using it until he does it of his own accord. We should be ashamed to make a formal speech to the child on the history and social necessity of using a fork. The same condition ought to be true with reference to accident prevention, and must be true if we wish results.

We formerly justified the retention of Latin, Greek or mathematics in the school curriculum solely on the theory that they would discipline the mind. The real test to apply to each subject is this: Is the pupil going to act in the same way after studying it as he did before? If so, let us cut it out of the curriculum and put something in its place that will modify his behavior, for the only education that counts is that which modifies behavior.

Form Habits of Safety

It is the function of the public school to teach accident prevention as a part of the regular instruction, and not as a special subject. There are two problems involved in teaching safety: first, making the instruction a vital part of the teaching of all the school subjects; and, second, the organization of the school into a welfare community that will make the instruction show results in the behavior of the children.

Coördinate Safety Instruction with All School Subjects

The subject of reading lends itself in a very effective way to accident instruction. Instead of the stereotyped reading lesson, we assign magazines and daily newspapers, with the idea that the students themselves shall select from these publications cases of accident, stories about accidents, or discussions of accidents. These articles are read by the members to the class; and in case the class feels that they are of sufficient value, the articles are preserved in a scrapbook for future classes and for the school.

Notice the value from an educational point of view of a lesson of this kind. In the first place, the pupil must exercise judgment in the selection of the material to be read. Where his judgment is not well founded, opportunity is afforded for discussion and criticism by the children and the teacher. The result is the development of a keen judgment on matters of social concern. Then, further, the child is permitted to read his own selection, which is new to other members of the class; therefore he has a present and impelling motive. It is necessary for him to get his story across, and to do this he makes unusual effort in the preparation and feels a responsibility to the class and to himself that he would not otherwise feel. He acquires, moreover, the habit of reading for information, and critically, the kinds of publications he will need to read as a citizen in his adult life. Furthermore, he is creating an ideal of social value in selecting his article with reference to the needs of the present and future classes; and, finally, he is learning about accidents, for in the selection of his own story for the class he will read many others.

Another example of the way a subject may be used in teaching accident prevention is afforded in language, both oral and written. Accident situations afford unusual material and motives for effective work in this subject. For instance, such subjects as "Accidents I Have Seen" or "Accidents I Have Read About," may be assigned for oral or written composition. If for an oral composition it may be understood when the topic is assigned that the best speeches may be made thruout the school in order to enlighten others in ways of avoiding accidents.

Organize the School for Accident Prevention

Of equal importance is the organization of the school for purposes of accident prevention. That is, the whole school must be consciously active in an effort to eliminate accidents in the community if this program is to be effectively carried out. This is accomplished thru committees of pupils who have the welfare of the school in hand, for example, at the dangerous crossings, and who see to it that the habit of acting cautiously in situations where accidents may be avoided is always emphasized.

ACKNOWLEDGMENT.—From an address delivered before the recent meeting of the National Safety Council, in Cleveland, Ohio.

If the old veteran had not saved this man, forgotten in the excitement of the fire, who would have done it! Yet thoughtless citizens still think all that is humanly possible is done to protect dependents in such homes.



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How the town praised him!

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Lindenlea Garden Suburb Planned for Ottawa

THE accompanying illustration shows the general layout of the Lindenlea Garden Suburb, which has recently been acquired by the Ottawa Housing Commission and laid out by Thomas Adams, Town Planning Adviser to the Canadian Conservation Commission.

In preparing the plan of the Lindenlea property, which covers about 22½ acres, advantage has been taken of the topography in such a way as to avoid the excessive grades which would be necessary on the gridiron plan. The savings thus effected figure in the cost of the lots, which also covers the cost of providing open spaces. These include tennis courts, a bowling green, a children's playground, a wading pool and small crescent areas of the main streets, all of which have been arranged on land that is least suitable for building. The wedge-shaped section dividing Rock Avenue at its junction with Elmdale Street, for example, is an outcrop of rock, which, in order to avoid the cost of excavating, has been incorporated as a central parking space. The total area of these open spaces is 118,734 square feet, or approximately one-eighth of the area.

The question as to how the improvement of sites reserved for open spaces, etc., will be financed and administered is a difficult one. The ownership may be vested in the city, or the Housing Commission may continue to act as trustee for the residents, pending the creation of a permanent trust.

The objection to transferring these areas to the city is that the City Council may not be disposed to maintain the open spaces for the benefit of the residents of

Lindenlea who have paid for them in the prices paid for the lots. On the other hand, the Commission may not be able to obtain from the City Council exemption from taxation. Among Mr. Adams' suggestions is one providing for the levelling and planting of the tennis courts and bowling green by the Housing Commission as part of the cost of developing the plot. He also suggests that a small club-house be erected and the Commission or the City Council lease the courts and the club-house to a club of residents at a rental equivalent to the interest and sinking fund necessary to pay off the capital expenditure. Whether this will be done is as yet undetermined.

The tract is divided diagonally by a principal thoroughfare called Rockcliffe Way, which is 66 feet wide along its entire length. Near the southern end there is a short connecting road called Ottawa Way. Above the center near the space set aside for the children's playground and wading pool, a



PLAN OF DEVELOPMENT OF LINDENLEA GARDEN SUBURB,
OTTAWA, CAN.

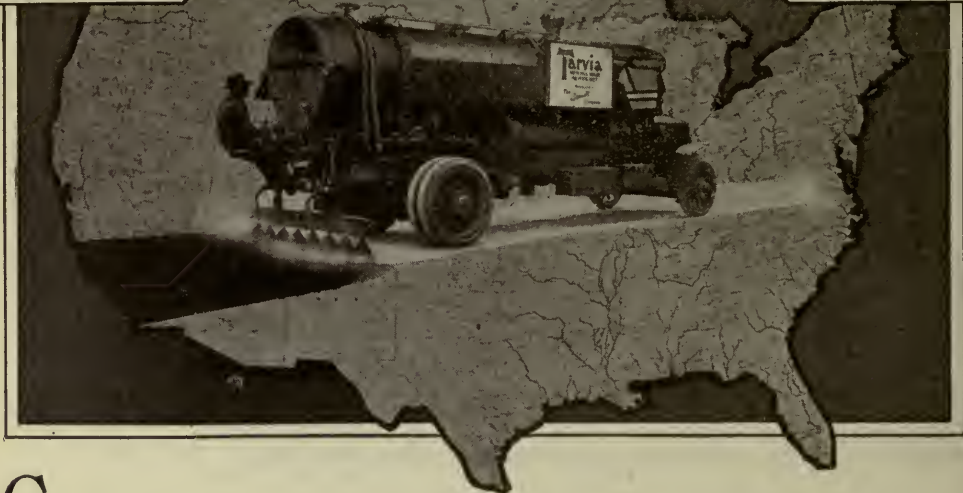
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secondary street of considerable width runs to the northeast. Two other secondary streets, Elmdale and Lindenlea, provide access east and west.

In the general layout, space is provided for the tennis courts and bowling-green on the southern edge, and on the highest portion of the property a site is set aside for public buildings, an institute or library or a combination of both. Near-by to the north, screened by trees, there is space for a garage. Generally speaking, small private garages erected on the lots with the houses will be discouraged, and residents will be encouraged to keep their cars in a common garage on Lindenlea Street at its juncture with Rock Avenue, where ample space for turning can be had and where the streets radiate in all directions. In the report on the development of Lindenlea, Mr. Adams also deals with the best kind of roadways, expressing the opinion that a simple form of macadam roadway from 14 to 18 feet wide will prove sufficient on most of the streets.

The total cost of the ground was about \$66,000, to which there must be added a margin of \$15,000 for the expenses of the

Commission. This brings the total to \$81,000, which, divided among the 168 lots of from 30 to 60 feet frontage, makes it possible to keep the price per lot well below the limit of \$600 set by the Commission. As a matter of fact, the lowest priced lot is \$320, and the highest, exclusive of local improvement, is \$595. Lots fronting on Rideau Terrace, which have already been provided with partial improvements, have been sold at an added price of 75 cents per front foot. Most of the houses to be erected on these lots will be detached, altho there will be a few group houses.

Most of the trees on the site will be preserved, and an effort is being made to place electric and telephone wires in the rear of dwellings so that there may be no unsightly poles upon the street. This will also mean that underground wiring will be employed for street lighting, but this is nowhere nearly so costly as providing underground conduits for private lighting services.

To date construction has been begun on 20 houses, and it is expected that by the end of next summer all the 840 future inhabitants of Lindenlea will actually be living on the estate.

The Local Grouping of Public Buildings

THE Cleveland City Plan Commission has directed its advisors, Robert H.

Whitten and Frank R. Walker, to prepare a comprehensive plan for the grouping of public and semi-public buildings in the various local and neighboring centers throughout the city. The action of the Commission came as the result of a report from the plan advisers in connection with the consideration of sixteen proposed school sites in which the importance of plans for the groupings of buildings in neighborhood centers was strongly urged.

The following is from the report:

"We wish to urge upon the Commission the desirability of preparing a comprehensive plan and program for the construction of public and semi-public buildings throughout the city. The idea exemplified in Cleveland's Group Plan should be extended to the various local neighborhood centers. A logical grouping of public buildings that are being constructed to serve the various sections of the city would add greatly to the public value of such buildings. With a carefully worked out building plan and the coöperation of the various build-

ing authorities, the local park, playground, field house, public bath, public library and school can well form a local group, thus constituting a community center that will aid materially in arousing a local civic interest and consciousness.

"In some cases, fire and police stations could be added to the local group. In other cases, a local health office and perhaps local representatives of some of the other city departments could be provided for in the local group plan. Often the grouping of buildings leads to considerable economy in the use of land, as yard spaces that would be of little value in connection with isolated buildings can be thrown together to create additional playground or parking space. In some cases, the buildings could be grouped about a small public square, thus adding additional distinction and interest. Often semi-public buildings, such as churches, private schools, settlement houses, branch banks, etc., would find it advantageous to coöperate in the development of the group plan. The more activities serving the spare-time needs of the adult as well as of the child that can be grouped in a single center, the greater will be the number of people visiting the center and the greater the use of each particular service included in the group.



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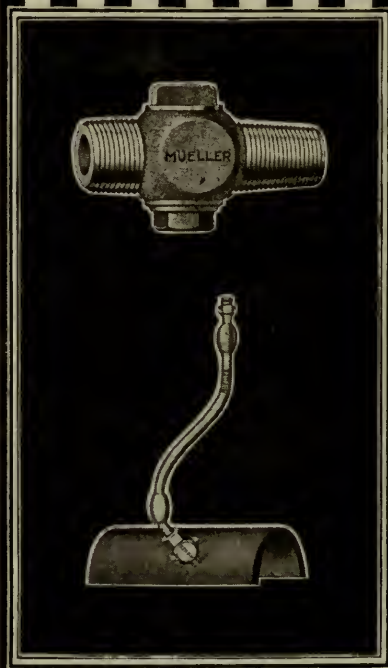
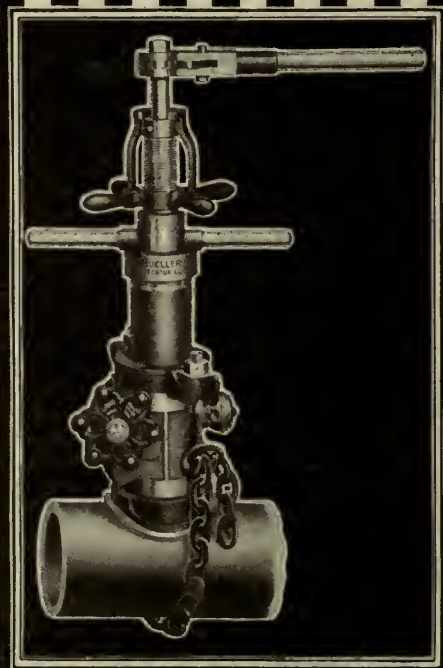
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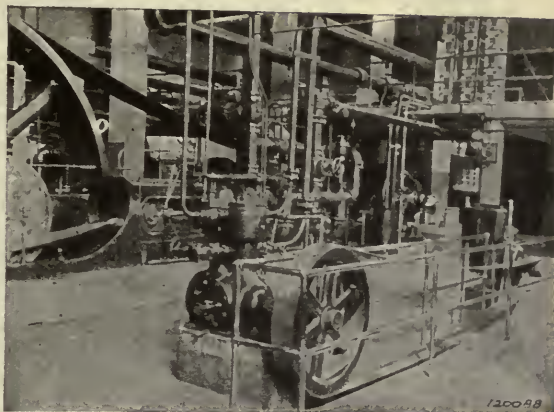
The Cold Storage Plant of the Port of Seattle

THE new port utilities in Seattle, Wash., are enabling this city—the metropolis of the Great Northwest—to act as distributor of a vast quantity of foodstuffs. The municipal grain elevators at this port were described in an article in the October, 1919, issue of *THE AMERICAN CITY*, which also summarized the city's other public terminal facilities and their management. Among these improvements is a large electrically operated cold storage and ice plant.

This plant is located at the Spokane Street Terminal, where ample transportation facilities are provided by both rail and water. The refrigerating plant serves the following: a fish warehouse, including four fish freezers; a 500-ton ice storage house; one general cold storage building containing 36 cold storage fruit rooms and 20 low-temperature rooms for meat and miscellaneous commodities. Fish, meats, fruits and vegetables of all kinds are handled, all on a wholesale basis, no retail business being done. Ice is also made and sold on the same basis, and a considerable business is done in icing railroad cars and ships that sail from the port of Seattle.

During the war the United States Government made good use of the facilities of the plant for supplying Camp Lewis and other government activities in the neighborhood of Seattle. The refrigerating plant machinery consists of three 110-ton ammonia compressors, each belt-driven by a 150-h. p. 380-r. p. m. Westinghouse motor, and a 7½-ton ammonia compressor used as a pump-out machine, driven by a 7½-h. p., 580-r. p. m. motor. This auxiliary compressor permits work to be done on any one coil without the use of one of the large machines.

The three 150-h. p. motors are controlled by what might be termed a semi-remote control, consisting of a magnetically operated contactor connected in series with the motor switches. The contactor is controlled thru a push-button switch, located at the motor controller, which is placed near



VIEW OF THE PORT OF SEATTLE ICE PLANT

the machine. An automatic master relay is provided for each machine to prevent excessive ammonia pressure, and is so connected as to open the contactor when the pressure reaches a predetermined value. A number of auxiliary push-buttons are also connected into this circuit and located conveniently to the main valves so as to afford a ready means for shutting down the compressors instantly from these points. Centrifugal blowers discharge air into 36 rooms, located 6 on each floor, and used for the storage of fruit.

In addition to furnishing refrigeration for a 7-story building, the plant also serves a 100-ton ice plant, from which ice is furnished at wholesale. The 50-ton ice tank is equipped with an ice elevator crane which can lift eight blocks of ice, each weighing 400 pounds. A 5-h. p. motor operates the hoist, and a motor of similar rating is used on the travel.

To operate the plant, which is electrically equipped thruout, there are installed a total of 50 motors, aggregating 600 h. p. in capacity. Three-phase, 60-cycle current at 440 volts is supplied from the city plant. According to those in charge of the cold-storage plant, the electrical system has operated with entire satisfaction, no defects having developed during the three years the plant has been in operation. The plant was designed by and is operated under the direction of G. Whitestone, Electrical and Mechanical Engineer of the Port of Seattle.

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KENTUCKY

Uniform Ordinances for Small Cities

Thru Coöperative Action, Rather Than Mandatory State Legislation

By F. P. Schoonmaker

City Solicitor, Bradford, Pa.

WHAT would have been the development of our American municipalities if in the beginning we had had free cities as well as free people, and had said to the city corporations, "You are empowered to do all things necessary to the comfort and well-being of your people, subject only to such restrictions as are necessary for the maintenance of the state and federal governments," instead of saying, "As the agent of the state you have power to do only such things as you are by charter expressly authorized to do."

If we had given to the city the same right of initiative that we have given to the individual, would not our individual cities have met the conditions brought about by their rapid growth? The responsibility would have been with the city itself. It would have had its problem, and the power vested in it by law to solve that problem, and, what is more, an intelligent people able to work out the proper solution.

If uniform ordinances would mean that we should lay down cut-and-dried rules and regulations to be followed blindly by each of our cities, then I am against uniform ordinances. They would deaden all municipal initiative, and could but result in the presence of mediocre men to handle city affairs. If cities were empowered to work out their own salvation, municipal offices would attract bigger men.

If we could call into service and co-operation the individual intelligence of our people to meet the new and complex conditions in all our swiftly growing cities, we could get results. We must lay down a hard-and-fast system by higher authority which all must follow. Rather let each city determine for itself what best suits its local needs.

We hear a great deal of late about uniform laws, regulations and systems, and in so far as they do not prevent development in the solving of the municipal problems before us, they are of benefit. It is hard to frame a system of laws that will fit alike

both large and small cities with all their varying industrial conditions. We must not deny to the larger cities regulations necessary to meet conditions there just because such regulations would be an undue burden upon the smaller cities. Certainly, it would not be fair, merely in the interest of uniformity, to impose upon our smaller cities regulations that would be burdensome if not impossible for them to comply with.

I feel that in Pennsylvania we are distinctly hampered by the constitution of 1874 in its prohibition of special legislation for cities by reason of our inability to meet the varying conditions arising in the several cities. If the laws must be uniform, let us make our enabling statutes so broad and the grant of power so ample that a city may do everything it is not by constitution or law restrained from doing. To conceive a city of very limited powers is, it seems to me, an un-American idea. We approve the utmost liberty to the individual, but the municipal government of the locality in which he lives can do only such things for the welfare of that citizen as are expressly enumerated.

Pennsylvania has made a start in the right direction in the legislation of 1919 by the amendment to the Clark Act in Article V, Section 2, Clause XLVI, which, under the "General Welfare" clause of the act, extends to cities the complete power of home rule. If this is so constructed by the court to give full meaning to the words of the act, we may soon see the Pennsylvania cities of the third class working out to suit their own conditions the municipal problems which confront them. Then the question will be, "What is for the best interest of our city?" instead of "What has the Legislature said that we must or must not do?"

For the purpose of comparison, uniform methods of accounting are greatly to be desired. Certain uniform police and traffic regulations would also meet favor with the people and result in greater public safety. These, however, are not to be attained by statutory requirements or in forms of ac-



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GOODYEAR

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counting systems and police ordinances which are mandatory upon the cities. Whatever of uniformity it is possible to secure ought to be brought about by the voluntary action of the cities concerned, which, of course, can only be taken thru the medium of some agency or league of municipalities. Surely a legislature many of whose rural members have no knowledge of or experience in the problems that are troubling our cities cannot properly cope with the situation. The best that they can do for us is to enact liberal enabling statutes which will give us the maximum of self-government consistent with the necessary state and federal control.

Let us for all time divorce municipal politics from state and national politics. I may be a Republican, but that fact does not qualify me to be city solicitor; a city engineer cannot prepare plans and specifications for a water plant just because he is a Democrat; in determining the necessities of their city in the matter of sewers, the mayor and council can find no aid in the platforms of any political party.

As a necessary foundation, therefore, upon which to build a proper system of uniform rules and regulations affecting our cities, I ask:

First, liberal enabling statutes that really give municipal home rule.

Second, the divorce of municipal politics from state and national politics, and the election of men to municipal offices solely upon their ability to perform the duties of their respective offices.

Third, coöperation of all our cities thru voluntary leagues of municipalities such as ours in Pennsylvania, in determining and recommending a system of uniform rules, regulations and ordinances which trained officials find best suited to local conditions. In order to get the proper results of coöperation in such a league some medium must be provided whereby the individual experiences of cities may be recorded for the benefit of all. Many social problems are now forcing themselves upon public atten-

tion: The high cost of living—what can the city do to alleviate conditions and prevent profiteering? Should the city control the sale of food? Are proper public markets being maintained? Is due attention being given to public health? Should we have municipal lodging houses? What can we do to improve housing conditions? What measures are being enacted and enforced for the suppression of vice? What is being done to afford proper amusement for our people? Is there assured to our working class a tolerable standard of living, and have we, as far as possible, guaranteed their health? Has proper provision been made for the unemployed?

Why could we not have an official publication circulated among all municipal officers and others interested in municipal work within the state? The Municipal League of Wisconsin publishes a monthly journal devoted to the municipal problems affecting Wisconsin cities. It is widely circulated and is found even in the public libraries of our own state. An arrangement might be made with *THE AMERICAN CITY* for an associate editor for each such state league. Our own state has established a bureau of municipalities. Possibly that bureau might well serve the interest of the state and the municipalities concerned by ascertaining and giving publicity to the municipal activities of our several cities. That bureau might also collect and recommend uniform regulations that would fit equally well the conditions prevailing in all our cities.

At any rate, the full advantage of these leagues will never be realized until some medium is found which will lay before all our cities the results accomplished in the individual municipalities, and will classify and recommend rules and regulations which will be to the joint advantage of all concerned. The Legislature cannot do it, but we can.

EDITORIAL NOTE.—This article has been prepared from a paper read at the recent convention of the League of Cities of the Third Class in Pennsylvania.

The most pressing of all civic problems is that of municipal home rule.

—Tom L. Johnson.

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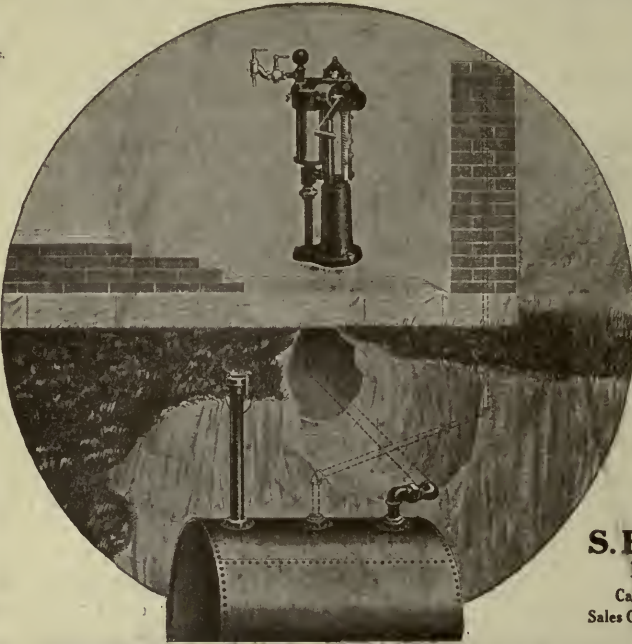
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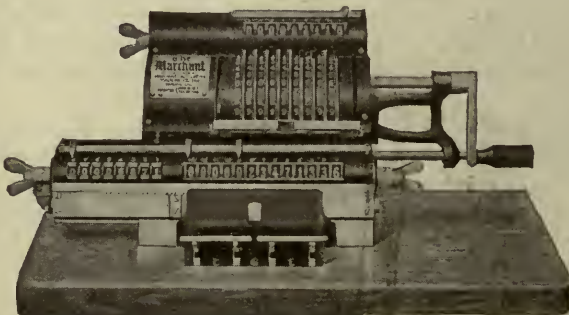
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Portland, Ore., Enlarges Pumping Plants to Meet Increased Demand

Peak Load Pumps Act Also as Spare Units in Old Pumping Station

AN interesting stand-by pumping installation, divided into three portions, was recently completed in Portland, Ore. Three electrically-driven pumps were installed in the municipal water-works to meet the needs of full-capacity operation during the time of peak loads in the summer months, and to act as spare units in the three principal stations at all times.

The water-supply for Portland flows by gravity thru two steel pipes from a point about 30 miles from the city on Bull Run River to storage reservoirs within the city on each side of the Willamette River. The capacity of these steel pipes is 65,500,000 gallons daily. The water is distributed by gravity to six low-service, and by pumps to nine higher, districts, and to several lower sections under reduced pressure.

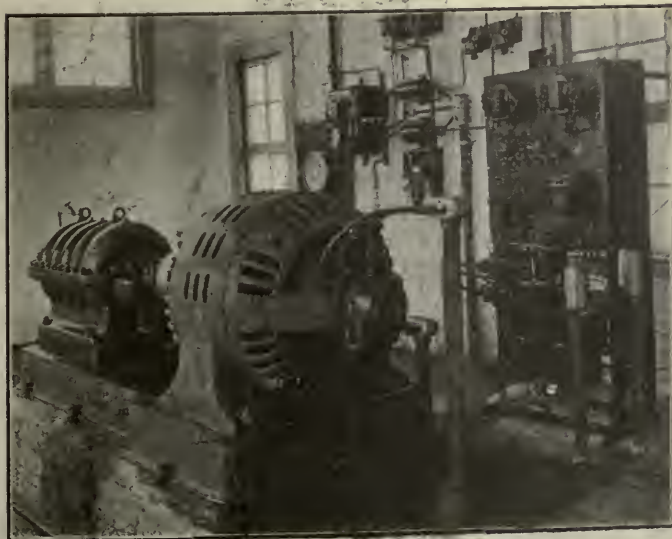
Some apprehension was felt because of the fact that, as there were no spare units at the station, and as the older pumping plants were operated at full capacity during the summer months when water consumption was particularly high, had any breaks occurred or minor repairs been necessary during the summer months there

was danger that some of the districts would be without water. During 1918 Fairbanks-Morse motor-driven centrifugal pumps were installed in the City Park, Fulton Park and Council Park stations.

In the City Park station two 5-inch, three-stage, horizontal split case centrifugal pumps, direct-connected to 100-horsepower slip ring induction motors, were installed, with the necessary switchboard equipment for operation. The pumps have a capacity of 700 gallons per minute against a head of 300 feet when operating independently, and a combined capacity of 700 gallons per minute when working in series against a total head of 600 feet. The specifications called for an efficiency of 61 per cent when working independently against a 300-foot head, and acceptance tests show an efficiency of 64 per cent.

One 75-horsepower induction motor, direct-connected to a 3-inch, 5-stage centrifugal pump, was installed in Fulton Park, with the necessary switchboard equipment. This unit has a capacity of 350 gallons per minute against a head of 430 feet, and shows an efficiency of 35 per cent when tested. The Council Park unit consists of a 3-inch, 3-stage centrifugal pump direct-connected to a 40-horsepower induction motor. The pump has a capacity of 150 gallons per minute against a total head of 235 feet, with an efficiency of 55 per cent.

With these additional units the city is now in a position to supply all sections with adequate service during periods of maximum consumption, and is able to overhaul the old units during slack periods.



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GENERAL SALES DEPARTMENT

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News and Ideas for Commercial and Civic Organizations

How Adrian is Meeting the Housing Problem

ADRIAN, MICH.—The housing problem that confronted Adrian this spring was not materially different from that of many other small middle-western cities. The lack of homes, while it embarrassed the city's growth, was not severely acute and was merely the result of war-time restrictions on normal building to take care of the city's natural growth. This had produced a lack of building activity which had forced the majority of speculative builders out of business.

A canvass of the city showed that about one hundred houses were needed. The Chamber of Commerce and its housing committee decided to form a home-building corporation, capitalized at \$50,000, which sum was at first considered sufficient. A program of building not more than ten houses at a time, of scattering these houses over the city on lots already available, and of building the houses under the direct supervision of the company's manager, was evolved. The city assessor's report showed that a large number of vacant lots were available at \$300 each, or less. The maximum price for a lot was therefore set at \$300, and only lots having all improvements were considered. Altho no definite return on the investment was specified, the committee on organization expressed the belief that, with good management, an annual dividend of 10 per cent might be expected.

The sale of stock was opened at a public meeting at which the housing proposition was fully presented. The investment possibilities, as well as the civic advantage to be gained from the successful operation of the company, were stressed in the campaign which followed. Newspaper advertising, appeals by mail to the prospects, and solicitation by committees were used. When about three-fourths of the \$50,000 had been raised and it became apparent that the re-

mainder could not be secured from new subscribers, a campaign to induce the principal stockholders to double their subscriptions was undertaken. This brought the total sales up considerably, and the company was incorporated for \$100,000. A manager was then selected, and he proceeded immediately with the erection of a test group of five houses. These houses were put up in widely scattered parts of the city and vary a good deal in their exterior design and finish.

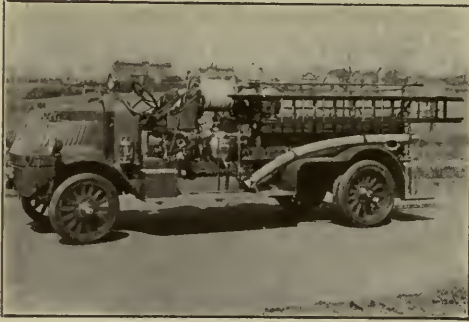
Fear was expressed when the project was launched that the prices of vacant lots would soar when it became known that the Adrian Homes Company wanted them. A local factory, however, placed the company in a strong position by taking options on twenty-five lots and turning the options over to the Homes Company. The lot-owners were informed that the company had the choice of taking up these options or buying other lots. On the other hand, many lot-owners showed a remarkable degree of civic pride by offering their lots at less than the prevailing market price.

The lot-owner who wants to build a house on his lot deeds his property to the company at an agreed price, the house is built and the property is deeded back subject to a mortgage, taken by the Building and Loan Association. The company will accept a second mortgage also, if necessary. The prospective buyer of a house and lot who is able to pay only a small percentage in cash pays 10 per cent down and makes weekly payments on the first mortgage to the Building and Loan Association. When the first mortgage is amortized by a sum equal to the second mortgage, a new mortgage is written covering both liens, and the Homes Company is paid in full.

Next spring, when the demand for the test houses being built this winter has been analyzed, larger groups of homes will be erected. By securing bids from local dealers, watching the wholesale market

MACK EQUIPMENT in your BUDGET

Have you included any in this year Budget?



FIRE APPARATUS

A Complete Line in
Light and Heavy Models



ROAD BUILDING EQUIPMENT

Hot or Cold Bituminous
Material Distributors

Cover 16 to 24 feet per trip



STREET CLEANING APPARATUS

Sprinklers, Flushers
and
Catch Basin Cleaners



REFUSE COLLECTION EQUIPMENT

Dump Trucks, Garbage Trucks,
Tractors and Trailers

Ask for Prices Now

INTERNATIONAL MOTOR COMPANY

West 64th Street, New York City

When writing to Advertisers please mention THE AMERICAN CITY.

closely, and occasionally picking up bargains from offerings of cars in transit, the Homes Company is able to get its lumber quite reasonably. The local market for native timber is also being combed, and this winter several farmers are cutting wood to be sawed up into joists and studding for next spring's houses. Native timber costs about \$40 a thousand feet, delivered, compared with from \$55 to \$60, the regular market price.

GEORGE M. HUNTER,
Secretary, Adrian Chamber of Commerce.

Municipal Deficit Erased in Chamber of Commerce Campaign

MIDDLETOWN, OHIO.—Altho Middletown has been developing its municipal resources along many lines and is growing rapidly, the city was confronted at the beginning of 1920 with a deficit of \$40,000. This sum was imperatively needed to prevent an almost irreparable interruption of the city's expansion. The tax laws of Ohio, which render it impossible for the cities in the state to levy a greater tax than one per cent, were responsible for the embarrassment of practically every Ohio city, on account of a lack of sufficient revenue to administer municipal affairs. The Chamber of Commerce had implicit faith in the civic patriotism of the citizens of Middletown, however, and undertook a campaign to raise the \$40,000. "Give a Day's Pay and Save the Day" was the appeal sent out in letters to seven hundred members of the Chamber of Commerce, and the response was very gratifying to those who had had faith. The \$40,000 was subscribed in a few days, and the city of Middletown will therefore be able to meet all its obligations for the year 1920.

The money will be used in relieving the city of its financial obligations to the Middletown Hospital and the public library; in making up the deficit in the city's appropriation for parks and playgrounds, and in supplying funds where other deficits were shown. A portion will be spent for street signs in the city and for road signs on the various highway approaches to Middletown. The fund may also be drawn upon for any other important activity coming within the province of the city government of the Chamber of Commerce which will reflect general community betterment.

The popularity of the movement was evident from the outset. The question in the letters, "Is your town worth while?" and the announcement that an unavoidable predicament had arisen from which there was an easy method of extrication "if your civic pride and patriotism has any cash value," struck a responsive chord in the hearts and minds of the people of Middletown. The same patriotism which had prompted their unselfish assistance in the war campaigns now surged up again and actuated them to give "a day's pay" to their city. Subscriptions came in from all classes. A man sixty years old who had been a resident of the city all his life dropped in at the Chamber of Commerce rooms one day and handed five dollars to the secretary. It was apparent that this amount was more to him than a day's pay, but he gave it cheerfully.

DWIGHT E. SMITH,
Secretary-Manager, Middletown Chamber of Commerce.

\$1,275,000 Voted for Improvements in Lexington, Ky.

LEXINGTON, KY.—Lexington took a long step forward last fall in carrying out the progressive program of the Board of Commerce in the overwhelming passage in November of four municipal bond issues providing \$1,275,000 for a municipal building and auditorium, street extensions, public school improvements, and a soldiers' memorial building. Altho a two-thirds vote was required, the returns showed that each project had a margin of more than 500 votes.

The credit for the passage of the bond issues was due almost entirely to the work of the Board of Commerce and the campaign of education conducted by it for several weeks before the election was held. Every known method of securing publicity for the undertaking was used to assure its success.

The municipal building is to cost \$500,000 and will contain an auditorium having a seating capacity of several thousand people. Two new high schools are to be built, one for white children and one for negroes, with the \$400,000 which was voted for that purpose. It is proposed also to increase the tax rate for school purposes in order to provide higher salaries for the teachers. The sum of \$300,000 authorized for street extensions and improvements will pay the cost of extending two down-town thoroughfares



DENBY MOTOR TRUCKS

Capacities
From
1 Ton up

Dependable Truck Equipment

Lost time, greater upkeep cost and shorter useful life make inferior motor trucks more costly than good trucks, the first cost of which is necessarily higher.

Denby equipment has proved perfectly adapted to municipal service because of its dependability, under all conditions of work and roads.

The final costs, considering first cost, depreciation, fuel and upkeep, are surprisingly low.

We will gladly send detailed data on the performance of Denby trucks.

DENBY MOTOR TRUCK COMPANY, Detroit

(65)

which parallel Main Street, and thereby decrease traffic congestion in the business district. The Kentucky Soldiers' Memorial will be erected on the campus of the State University in Lexington, and will cost approximately \$300,000, Lexington voting \$75,000 as the city's share in addition to a county appropriation of \$25,000. The building will serve both as a museum and as offices for one of the student organizations.

The construction of these improvements will begin early in 1920. A commission of citizens has been appointed by the Mayor, to serve with the city commissioners in accepting plans and making contracts. The bonds will be dated February 1, 1920, and will run from thirty to forty years at 5½ per cent interest.

C. F. DUNN,
Secretary-Manager, Lexington Board of Commerce.

College Secured for Bluefield

BLUEFIELD, W. VA.—When the Baptist General Assembly for Southwest Virginia made known its intention of establishing a college in that vicinity, it was regarded as absolutely out of the question for any West Virginia city to attempt to secure it. But that is exactly what Bluefield did, in the face of keen competition with the cities of Roanoke, Bristol, Marion, Radford, Wytheville and Big Stone Gap.

Last July the Baptist Educational Board

held a hearing at Bristol, Va.-Tenn., at which the representatives of the competing cities presented their cases. Because there is no direct railroad connection between Bluefield and Bristol, it was considered more expedient for the sixty-five men making up the Bluefield delegation to drive overland in automobiles, altho two mountains had to be crossed and the road for a number of miles was almost impassable. Despite these obstacles, those sixty-five business men dropped their work and professions and motored two hundred and twenty miles to Bristol and return, the trip requiring one day each way and one day at Bristol. It was a most impressive and unselfish pilgrimage for a community purpose.

The Bluefield delegation outnumbered the delegates from all the other cities combined, and the Bluefield spirit was in evidence everywhere at the hearing. The enthusiasm and earnestness of the Bluefield men and the significant attendance compelled our Virginia competitors to take us seriously, altho we were on the very edge of the district for which the college was primarily intended.

When the Baptist Board called for definite offers for the college, Bluefield again stepped to the front with an offer of \$75,000 in cash and a site valued at about \$50,000. The Chamber of Commerce started the



THE DELEGATION OF BLUEFIELD BUSINESS MEN THAT MOTORED 200 MILES OVER MOUNTAINS TO ATTEND HEARING ON THE QUESTION OF THE LOCATION FOR THE NEW BAPTIST COLLEGE

Another **FEDERAL**

Municipal Popularity

The Man who selects machinery, materials or trucks for the Municipal use is usually more careful even than when he buys for himself.

His judgment is at stake—he must be sure now-a-days that the public is served efficiently.

That is one of the reasons why many municipalities are using Federal Motor Trucks.

Among the many municipalities owning Federal Trucks is the city of Pasadena, California. Officials of the street department are emphatic in their high praise of Federal performance as typified by the work of this truck.

When it devolves upon you to select a motor truck for your city or county, why not find out the reason why Federals are popular with city and county officials generally?

“Traffic News”—the Magazine of Haulage—sent free on request.

FEDERAL MOTOR TRUCK COMPANY
34 FEDERAL STREET DETROIT, MICH.

*“Shorten the Miles
to Market”—“Use
Motor Trucks”*



*This Federal Truck
is owned by the City
of Pasadena, Cal. It
is operated by the
Street Dept. of that
city.*

campaign to raise this money with a dinner, at which, after a series of earnest speeches, a call was made for subscriptions. In forty-five minutes \$51,900 was subscribed, and two days later the entire amount had been raised. Only one subscription of over \$1,000 was received, and that one was for \$3,000.

Meanwhile, options had been secured on one of the most beautiful sites in the country, and minute data compiled to show the unusual possibilities of Bluefield as an educational center. Not a day was allowed to pass by for months without the members of the Board being reminded in some way that Bluefield was preëminently the place in which to locate the college. The opposition could not endure in the face of such activity. When the matter was brought before the Baptist Educational Board for decision in November, all but the three Bristol members of the Board voted in favor of the West Virginia city. On the following day the General Assembly ratified the action of the Educational Board.

CARROLL R. WOODS,

Secretary-Manager, Bluefield Chamber of Commerce.

Kenosha's Method of Meeting Mail Order Competition

KENOSHA, WIS.—In considering how to combat the mail order business, the Kenosha Retailers' Association decided some time ago that advertising about patronizing home industry was useless, because the public will buy wherever it thinks the best value and the best service are obtainable regardless of "home industry" or who pays the lion's share of the local taxes. Instead of fighting the mail order houses, which only thrive under our knocks, why not beat them at their own game? This association purposes to issue in the spring a regular mail order catalog showing the goods carried by the stores in Kenosha. The catalog will be well illustrated with actual pictures of the articles offered, with as thoro a description as it is possible to give, including the price in every instance. None of the individual merchants' names will appear. The catalog will be published by a fictitious company, to which all orders will be addressed.

Each article listed in the catalog will bear a stock or order number, to be used by the persons ordering merchandise thru the mails, and this order number will indicate to the order clerk receiving it from which store the article is to be secured. In the

case of a mixed order, the goods will be collected from the several stores and assembled at a central shipping point, and from there sent to the customer.

It is believed that by this method not only will a large volume of merchandise be sold, but that a great many people will acquire the habit of buying in Kenosha. Then, too, many people like to shop from a catalog, especially the farmers, who seldom have an opportunity to visit the stores personally. A catalog will probably be issued every six months.

H. G. MADDOCK,

Secretary, Kenosha Retailers' Association.

Wheeling Chamber Helps to Adjust Labor Difficulties

WHEELING, W. VA.—The Wheeling Chamber of Commerce has taken much interest in the industrial situation during the last few months, and has used its good offices very effectively in a number of strikes which have broken out from time to time. Besides assisting in the settlement of a serious street car strike last spring, the Chamber mediated in the building trades strike, which tied up all building in the Wheeling district for a number of weeks, and was in a large measure responsible for getting both sides together to submit their differences to arbitration. The Chamber also mediated in several other labor disputes with satisfactory results. It was due partially to the work of the Chamber of Commerce that the steel strike, which greatly affected the Wheeling district, was quickly brought to an end in this district. The Chamber was neutral as to the issues involved and confined its efforts to acting as a mediator in the interest of the general public. It endeavored to convince the workers that the strike had proved to be a failure in other districts, and that to continue it in the Wheeling district would result chiefly in suffering and distress for the thousands of strikers and their families; also that it was doing an injustice to business in general and therefore injuring the community as a whole, and, if continued, would probably result in closing for an indefinite period several of the big mills in this locality, or in their removal.

Thru the columns of the monthly bulletin and thru the local press the Chamber of Commerce is working not only to the end of stabilizing industrial conditions, but in the

Make Streets Clean

WITH

“STUDEBAKER MODEL”

FLUSHING AND SPRINKLING UNITS

MOUNTED ON MOTOR TRUCKS

Flushing saves time, labor and expense and protects your community from disease germs in the street dirt which is blown from the pavements.

The “White-Wing’s” push broom or the rotary brush in a street sweeper does not remove the fine particles of dirt and dust.

Wash your streets with a flusher and make them sanitary.

Write any motor truck manufacturer or ask the truck dealer in your city for complete information on “STUDEBAKER MODEL” Flushing and Sprinkling Units mounted on their truck, or address—

Municipal Supply Company

South Bend, Indiana

hope of bringing about better relations between the employer and the employe. It is also trying to establish such complete confidence in the Chamber of Commerce on the part of all employers and employes, as well as the general public, that the Chamber's services will be solicited before any lock-outs, strikes, etc., occur. It is believed that the adoption of that policy for some time to come will make Wheeling conspicuous for its lack of industrial unrest.

H. P. CORCORAN,
Manager, Wheeling Chamber of Commerce.

Chamber Evolves Plan for Reducing Labor Turnover

CONNERSVILLE, IND.—A method of reducing labor turnover that has been tried out successfully by the Connersville Chamber of Commerce is presented herewith for the benefit of other industrial communities. The system was installed by the Chamber's Labor Bureau, which undertook first of all to secure the industrial history of every man working in a Connersville plant. The information was recorded on cards, a separate one for each man. In making up the card forms for obtaining this information, the bureau was very careful in wording the questions to deal only with the individual's virtues; that is, the question was not whether a certain drawback existed in connection with the man, but whether he possessed the contrasting virtue. This is important, because the list was not intended to be a "black list," and there should be nothing done to create that impression.

A supply of the cards was placed in the hands of the superintendent of each plant and he was asked to list the men employed in that plant on a certain date. The cards were then collected and filed alphabetically, becoming the master cards in the bureau's system and bearing on the reverse side later information collected.

Each plant was furnished with a supply of "hired" and "fired" reports. Whenever a man's name disappeared from the payroll the Chamber of Commerce was notified and the reason for such disappearance given. The Chamber was notified in the same way whenever a man was taken on. The information thus received was always checked up on the master card. The plants were also supplied with "application for employment" blanks, and had a definite understanding with the Chamber's bureau

that they would employ no one without first calling up the Chamber of Commerce and checking up on the man's story.

The bureau also kept a list of cards in which the same workmen were classified by plants. Whenever a man was reported as having left one concern, his card was taken out of this file and placed in an "unemployed" file until a report was received that he had been taken on by some other concern. Various colored signals indicating the different trades were attached to the cards in the "unemployed" file to enable the bureau to determine at a glance how many molders, drill press operators or cabinetmakers were apparently unemployed at a given time. The factories found this list of great value when they were in urgent need of help.

The system was found to be particularly useful during the period when men were constantly moving from one plant to another in an effort to secure the highest temporary wages, and in a great many instances exaggerating the amount they had last received. It was also found to be useful as a means of keeping round pegs out of square holes. A man who was given employment was assigned to the class of work for which his experience best fitted him. The success of the system in reducing labor turnover was marked. During the period the plan was in operation the Connersville labor turnover averaged less than 130 per cent as compared with an average of 400 and 500 per cent in other Indiana cities. The expense of conducting the Labor Bureau was met by the manufacturers' paying five cents per month for each man listed. Copies of the forms used in this work may be obtained from the secretary of the Chamber of Commerce.

Against the advantages of the system above described is the unescapable fact that the majority of the men acquired a false idea with regard to it, and talked a great deal about the "black list." The Chamber acknowledges its mistake in not conducting a preliminary educational campaign before putting the plan in operation. If it is tried again in Connersville its installation will no doubt be preceded by a full and frank discussion of its purposes and the method of operation, in the hope of preventing this adverse criticism.

E. L. TRIFFIT,
Secretary-Manager, Connersville Chamber of
Commerce.



Specially-equipped Packard Truck closing Water Gate in City Water Main, Detroit. When a main is broken and property is being damaged, the only truck of any value is the one that is always ready for service.

Is the City Official Always Ready for Emergencies?

IN Detroit damage from broken water mains is cut to the minimum by the use of this special Packard Truck that reaches any point in the city a few minutes after the alarm is given.

For over two years this truck has been operating the water gates of Detroit. It saves the labor of four to eight men and closes the gates in less than one-fourth of the time formerly needed.

It is the day-by-day dependability of the Packard that makes it peculiarly suited for such emergencies.

The Packard is supervised from the ground up by the one responsible Packard organization. Every part of every Packard Truck is designed, tested and controlled by the Packard Company from start to finish.

Packard engines are tested on the block to an equivalent of 1,000 miles road service. A Packard Truck is "run in"—ready to do a full day's work the day it is delivered.

The City Official who feels his responsibility wants the safeguard that Packard transportation affords in every emergency.

"Ask the Man Who Owns One"

PACKARD MOTOR CAR COMPANY, Detroit

Corning Chamber's Bulletin Published in Local Newspaper

CORNING, N. Y.—A house organ of unusual interest and novelty is being issued by the Chamber of Commerce of Corning thru the utilization of advertising space in one of the daily newspapers. By purchasing a certain amount of space each month, the bulletin is given a regular position, is published inexpensively and reaches a greater number of people than would other-

regular cut service. The space rate is thirty cents an inch and the cost of publishing each issue of the bulletin is \$12. The newspaper has a circulation of 8,000. If the Chamber of Commerce were to have its bulletin printed separately it could scarcely reach the membership alone for that sum.

Early in December a special Christmas edition was printed, occupying a full page, which was fully departmentalized and well balanced. There were live news items as

 <p>A GOOD EXAMPLE</p> <p>Industry builds the hive; energy will build Corning</p>	<p>OFFICIAL BULLETIN</p> <h1 style="margin: 0;">CHAMBER OF COMMERCE</h1>	<p>THE KEY</p>  <p>A bridge will unlock the door of Progress.</p>
Vol. III, No. 9.	CORNING, N. Y., JAN. 7, 1920	Published Every Fortnight
<h2 style="margin: 0;">1919 Prosperous; Indications of Great Activity and Growth in 1920</h2> <p>Judging from newspaper accounts which appeared in the last week of December, the year 1919 was one of the most prosperous in the history of Corning. Merchants in various parts of the city report that their volume of business during the last year has exceeded any previous year, and has in fact been far in excess of expectations. Postmaster John W. Lynahan, stated at a recent meeting of the Members' Council, that the holiday business in 1919 was heavier at the Corning Post Office than any time in the past. Reports from the banks and Savings & Loan Association indicate that the people of Corning have been thrifty, and that during this last prosperous year when money was plentiful, they have added materially to their savings.</p> <p>On the high tide of this wave of prosperity when a spirit of achievement is evidenced in the business circles of Corning, the Chamber of Commerce is planning an program for the year 1920. The coming twelve months will see great strides taken in civic work in the direction of long needed improvements and spirit of friendship and progress.</p>		<p>MEMBERS ENDORSE BRIDGE PROPOSAL</p> <p>One of the most successful and interesting meetings of the Chamber of Commerce was held in the closing days of December, when approximately forty-five men gathered together to discuss the much mooted and long discussed question of a bridge across the Chemung River. The sentiment expressed was overwhelmingly in favor of a bridge. It was pointed out that the future progress and development of Corning hinges on this one big undertaking. Mayor Lane and City Attorney Justin V. Purcell, as well as other city officials, were present at the meeting.</p>
 <p>Look Pleasant Please</p> <p>Especially When You Are Asked to Do Your Part in the 1920 Program of Progress</p>		
<p>COMMUNITY XMAS SINGS SUCCESS</p>		<p>PAY NO TAXES ON CHAMBER</p>

A TYPICAL HEADING OF THE BULLETIN ISSUED BY THE CHAMBER OF COMMERCE OF CORNING, N. Y.

wise be possible. The issuance of the official publication in paid advertising space is part of the general policy of the Corning Chamber of Commerce to sell itself to the entire community and not alone to the membership.

The bulletin occupies a four-column space, ten inches deep, in the *Corning Evening Leader*, the leading daily, twice a month. This space is divided into five narrower columns, ten ems wide, and thru the proper use of type faces and headings a complete newspaper within a newspaper is formed, for which there is a large and increasing number of readers. The bulletin uses a

well as feature articles, also an editorial column. Generous and effective use was made of the newspaper's border and decorative cut service, and the newspaper men of the city declared that the page was a typographical triumph. Every effort was made to enliven the columns, and this special edition was undoubtedly widely read, judging from the favorable comments which were heard immediately following its appearance. The sympathy of the newspaper men and the printers has been enlisted to such an extent that they feel personally responsible for the success of the bulletin.

WALLACE A. BRENNAN,
Manager, Corning Chamber of Commerce.

WATSON DUMP WAGONS



A Watson Wagon is second to none. They can help you expedite your road building and all other construction work.

They are sturdy and stand up under all loads and on all roads.

Watsons are real service wagons. They are built to last—built to give you your money's worth and then some.

That's why they are the favorite among the leading contractors and municipalities.

Write us for printed matter about Watson Wagons, Trailers, Semi-Trailers and Tractors.

WATSON PRODUCTS CORPORATION

Successors to Watson Wagon Co.

30 CENTER STREET

CANASTOTA, N. Y.

Kansas City's Employment Manager's Council

KANSAS CITY, Mo.—An Employment Managers' Council was formed last September as a part of the Industrial Department of the Kansas City Chamber of Commerce, with the idea of bringing together as frequently as possible the men who do the employing in the factories and in the wholesale and retail establishments of Kansas City, to discuss the problems encountered in their work. The Council has adopted a constitution and is regularly organized with officers and a Board of Directors, a program committee and a membership committee. The Chamber's Industrial Commissioner and the Chairman of its Employment Committee are ex-officio members of the Board. An annual membership fee of \$10 is charged.

The objects of the organization are:

1. To encourage and foster the study of employment problems and the installation and development of employment departments
2. To hold regular meetings for the discussion of employment problems
3. To act as a clearing-house for better methods of handling employment problems
4. To encourage a closer coöperation between employment men
5. To secure mutual helpfulness in selecting, placing, training and managing employes

The average attendance at the meetings, which are held every two weeks, is about fifty. The men appear to be well satisfied with what they are getting out of the deliberations, as practically the same men come every time. The meetings are being conducted on the plan of having an employment man as the principal speaker once in four weeks and an executive of some large establishment at the intervening meetings. It is hoped in this way to create an interest in the Council on the part of the heads of establishments and at the same time make it possible for the employment managers to get direct from the executives themselves their ideas on employment matters. Not all the members of the Council hold the title of employment manager, because in many of the smaller concerns the superintendent or the foreman does the hiring. It is just as desirable, however, that the smaller establishments be represented on the council as the larger ones.

The following topics were chosen for this winter's discussion:

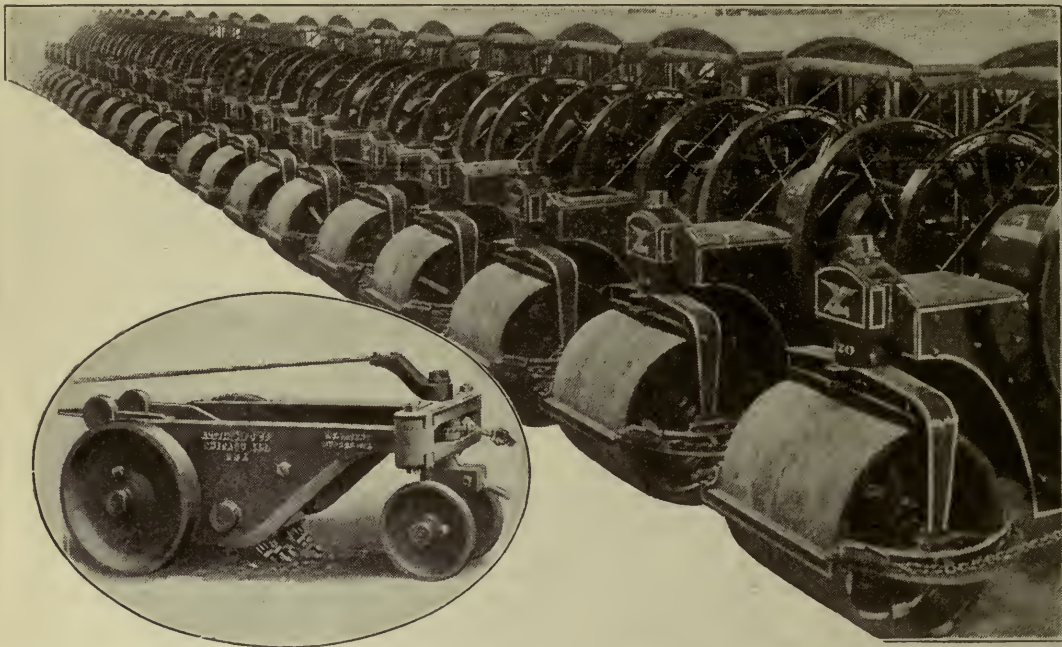
Wage-Fixing and Profit-Sharing
The Value of a Centralized Employment Department and the Employment Manager's Job
Managing Men
The Laboring Man's Psychology
Training Employes
What the Schools Can Do to Help
Factory Efficiency
Women in Industry
The Advertising Power and the Advertising Value of Contented Employes
What Are Fair Working Conditions?
When and by Whom Should Employes Be Fired, and Responsibility and Authority of the Employment Manager

One of the valuable results of the organization of this Council is the desire of some of the employment managers for closer coöperation between themselves and the school authorities, in order that the high school pupils may be given an opportunity to choose a vocation while they are in school and study for it, rather than wait until they have left school and then accept whatever occupation may fall to their lot. With that end in view, a special committee on vocational education will be organized, made up of prominent employment managers and executives. These individuals will spend considerable time in addressing the pupils in the schools and in holding informal conferences with small groups, explaining to them what the possibilities are in certain lines of business and what are the opportunities for advancement.

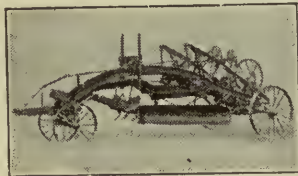
E. W. MENTEL,
Industrial Commissioner, Kansas City Chamber of Commerce.

Attleboro Chamber Promotes Thrift by Unusual Method

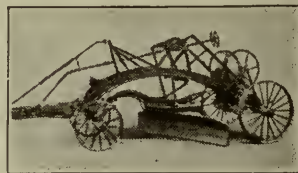
ATTLEBORO, MASS.—A plan designed to induce the citizens of Attleboro to trade at home, as well as to pay cash for goods purchased and to encourage thrift, was put into effect during the last two weeks in December by the Merchants' Bureau of the Attleboro Chamber of Commerce. Advantage was taken of the opportunity afforded at the time the local banks sent out their checks covering the savings of their depositors under the Christmas Thrift Club plan, which they did on December 15. The Chamber of Commerce issued a so-called Thrift Club discount card providing for purchases of goods up to \$50 worth, and the banks enclosed these discount cards with



Labor Saving Is Money Saving



Most of the profit you properly can make on a road contract is derived from what you save in labor by intelligent management. Not only must you use labor saving equipment, but you must see it is thoroughly good equipment.



A first class well balanced line of Road Machinery is the

AUSTIN-WESTERN

Manufactured entirely in our own factories and sold under guarantee direct from factory to user, the owner is protected by the oldest established and largest organization of the kind.

Our General Catalog No. 18 describes almost 250 sizes and styles of machines.

SEND FOR IT

THE AUSTIN-WESTERN ROAD MACHINERY CO. Chicago

OUR BRANCHES:

New York City
Columbus, O.
Albany, N. Y.
St. Paul, Minn.
Portland, Ore.

San Francisco
Los Angeles, Cal.
Boston, Mass.
Dallas, Tex.
Atlanta, Ga.

Jackson, Miss.
Memphis, Tenn.
Charleston, W. Va.
Richmond, Va.
Oklahoma City

New Orleans, La.
Louisville, Ky.
Nashville, Tenn.
Philadelphia, Pa.

OUR LINE

Motor Tandem Rollers
Motor Macadam Rollers
Steam Rollers
Jaw Rock Crushers
Gyratory Rock Crushers

Stone Elevators
Stone Screens
Stone Bins
Quarry Cars
Elevating Graders

Blade Graders
Road Planers
Road Scarifiers
Motor Street Sweepers
Horse Drawn Sweepers

Horse Drawn
Sprinklers
Road Oilers
Dump Wagons
Stone Spreaders

the Thrift Club checks sent out, the discount cards representing in each case as many dollars as the check amounted to.

On presentation of the card, a discount of five per cent was offered on all goods variously purchased for cash at any of these merchants' establishments between December 15 and 31 up to the amount of the holder's Thrift Club check. An invitation

punched, and the card has a discount value of \$2.50 on purchases totaling \$50.

WALTER O. LOCHNER,
Secretary, Attleboro Chamber of Commerce.

Child Conservation in New Jersey Urged in Strong Resolution

The following interesting program was presented for consideration at the annual convention of the New Jersey State Chamber Federation, a subsidiary organization of the New Jersey State Chamber of Commerce, held in Newark, N. J., November 6, 1919: Daylight Saving Thru State Enactment; Child Conservation and Venereal Disease Control; Waterway Development,—Intracoastal Canal and New Bay; and Opposition to the Campaign in New Jersey to Secure Funds for Community Service, Inc. Resolutions on each subject were adopted and have been submitted to each organization in the state for confirmative action. The resolution regarding child conservation reads:

Whereas the people of New Jersey have forcibly declared themselves for the adoption by the state of a definite policy of child conservation, expressing themselves thru their Legislature as well as thru various societies of wide organization, such as the Council of National Defense, the Red Cross Society, and others, and

Whereas any program of child conservation to work effectively must be carefully coordinated with other health and educational programs, whether these represent the activities of public or private organizations, and


Whereas the neglect of preventive health measures has been amply proven to have worked not only great injustice to countless families and individuals, but to have been a most prolific source of heavy expenditure of public money thru the necessity of establishing institutions which make no returns of revenue, character or civic use,

Be it resolved that child conservation is of vital concern to each community in New Jersey and that it can best be accomplished thru concerted effort and unified action under a program defined by the Division of Child Hygiene of the State Department of Health, and

Be it further resolved that the State Chamber Federation urge each local organization to take active steps in its community to further child conservation and give all possible assistance to make its state program effective.

HOWARD R. HEYDON,

Secretary, New Jersey State Chamber of Commerce, Clinton Building, Newark, N. J.

 <div style="text-align: center;"> <p>Void After December 31, 1919</p> <p>ATTLEBORO MERCHANTS' BUREAU</p> <p>THRIFT CLUB</p> <p>DISCOUNT CARD</p> </div>																															
<p>To encourage thrift by enrolling in the Thrift Club of the Attleboro Trust Company or of the First National Bank of Attleboro;</p> <p>And to express their interest in the Thrift Club depositors of Attleboro, as well as in appreciation of the opportunity to now serve these thrifty people:</p> <p>The undersigned members of the ATTLEBORO MERCHANTS' BUREAU offer to you this 5 PERCENT DISCOUNT CARD which has a total 5 percent discount value of \$2.50 on purchases totaling \$50.00.</p> <p>By presenting this card—at the time of making payment for merchandise bought between December 15 and December 31, 1919—any of the undersigned stores will allow you a 5 PERCENT DISCOUNT on the amount of your purchases to the limit of unpurchased amounts of this Discount Card. This discount applies on cash sales only.</p>																															
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was extended to the recipients of the cards to again become members of the Thrift Club of either the Attleboro Trust Company or of the First National Bank of Attleboro by placing the money thus saved in one or the other of those depositories. The card (reproduced above) shows on three margins figures representing dollars from one to fifty. The amount of the purchases is



THE SECO PORTABLE PUMPING APPARATUS

CLEANING sewer catch basins for the City of Detroit,

At a marked reduction in cost and accomplishing the work 3 to 4 times faster than any other method,

In a clean and sanitary manner, safeguarding the health of the City.

Mounted on Special Kelly-Springfield Chassis.

Let us tell you more about it.

Write for full information and catalogue

THE SPRINGFIELD ENGINEERING COMPANY
SPRINGFIELD, OHIO

The City's Legal Rights and Duties

Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Ordering Local Improvements

The limits of the districts to be taxed for local improvements rest in the discretion of the city council ordering such improvements, and the courts will interfere only to correct a clear abuse of that discretion. And the council is clothed with discretion to determine what improvement is required, its nature and character, when it shall be made, and the manner of its construction. Such discretion, when honestly exercised, is not reviewable by the courts. The requirement of the Illinois Local Improvement Act for award of contract to the "lowest responsible bidder" does not mean that the lowest price bid is determinative of right to the award. Capability of the bidder to do the work in a satisfactory manner must be considered. (Illinois Supreme Court, *People vs. Omen*, 124 Northeastern Reporter, 860.)

Legal Aspects of Streets

The paramount purpose for which the streets of a municipality are dedicated and opened is to facilitate travel and transportation. They are held in trust for the benefit of the public and are required to be kept open and free from nuisance. Rights in streets or highways granted to public service corporations are at all times held in subordination to the superior public rights. The grantee of a franchise from a municipality to construct and operate a street railway in its streets accepts the grant with presumed knowledge of the dominant rights of the public and that the municipality has not the full powers of an individual in making the contract; and in the absence of valid provisions in the contract there is no implication that on the expiration of the franchise or its forfeiture for noncompliance with its terms, the grantee may tear up the streets in order to remove its tracks, without restoring them to the condition in which it found them. (Ohio Supreme Court, 125 Northeastern Reporter, 116.)

Municipal Liability for Internal Improvement Cost

Where a municipal corporation, which has the power to make a contract for internal improvements, contracts for them, and stipulates that the agreed price of the improvements shall be paid to the contractor out of funds to be realized out of special assessments, or out of the proceeds of bonds it has the power to issue, and the corporation has power to make the assessments or to issue the necessary bonds, but fails to make sufficient valid assessments, or to issue sufficient bonds to provide the necessary funds to pay the contractor the contract price of his material and labor, or if it misappropriates such funds to other purposes, the corporation itself becomes primarily liable to pay the contract price. (United States Circuit Court of Appeals, Eighth Circuit; *Oklahoma City vs. Orthwein*, 258 Federal Reporter, 190.) Editor's Note.—As supporting the rule of law above stated, the court cites decisions reached by other federal courts and by the appellate courts of California, New York, Oregon, Kentucky, Kansas and Louisiana.

Enforcing License Ordinances

A municipality is without power to provide criminal prosecutions as a means of enforcing payment of municipal license taxes except as the power may have been conferred by act of the general assembly. (Louisiana Supreme Court, *Town of Abita Springs vs. Pons*, 83 Southern Reporter, 216.)

Court Regarded as a Street

A thoroughfare used for public travel is to be regarded as a "street," and subject to improvement as such, altho it may be short, end in a cul-de-sac at one terminus, and fall within common designation as a "court." (Kentucky Court of Appeals, *Melvin vs. Central Construction Co.*, 215 Southwestern Reporter, 811.)

Our Strongest Advertisement is the testimony of users of **TIFFIN FLUSHERS**



From City of Flint, Michigan

"The Tiffin Flusher has been satisfactory. We have been operating Tiffin Flushers for street cleaning purposes in this city for the past three years. Previous to that time street cleaning was done with horse-drawn sweepers, preceded by a horse-drawn sprinkling wagon. The saving effected with the change has been very great and in addition thereto we have been able to keep our streets in a much cleaner condition. During the time that streets were being cleaned with horse-drawn sweepers, it was deemed necessary to sprinkle the pavements in order to lay the dust, but since using flushers we have kept our streets in such condition that street sprinkling has become unnecessary."

May we send "Street Flushing," a book of real value to all those interested in this modern, sanitary method of keeping city streets clean?

The TIFFIN WAGON COMPANY, Tiffin, Ohio

Validity of Restaurant Regulations

In the case of *Ogden City vs. Leo*, 182 Pacific Reporter, 530, the Utah Supreme Court sustains the validity of the following regulation, as tending to promote morality of conduct of restaurant patrons:

"It shall be unlawful for any person, firm or corporation to keep, maintain or operate any such public eating or drinking place containing in the public eating or drinking room or hall thereof any booths or stalls constructed by means of or by the use of partitions, curtains or screens which shall be higher than three feet six inches from the surface of the floor of such room or hall provided that on any mezzanine, or higher floor, or platform of such public dining or drinking room or hall, and wholly within such room or hall, enclosed by the walls and ceiling, it shall be unlawful to keep or maintain any such booth or stall of any height, kind or description."

Authority for the adoption of such an ordinance is found to exist in charter power to regulate restaurants, and to adopt such regulations as are necessary and proper to improve the morals of the inhabitants.

Vehicular Traffic Laws Conflict

The ordinance provision of the city of Cleveland, that no load weighing more than 10 tons inclusive of vehicle shall be driven over the city's streets, excepting by special permit applying to certain streets, is not invalid as being in conflict with a state law, fixing 12 tons as the maximum weight inclusive of vehicle that may be hauled over streets, highways, bridges, etc., within the meaning of an Ohio constitutional provision empowering municipalities to adopt police regulations "not in conflict with general laws."

"There is no language in the home rule amendment which indicates that it was ever intended that the right of the city under that amendment to exercise the governmental control of the streets should end when it had located and surveyed the street, prescribed its width and grade, excavated it and put in the broken stone and concrete, laid the brick, stone, or asphalt upon it, paid for all of these things out of the municipal treasury, and assumed full responsibility for keeping the street open, in repair, and free from nuisance, and that thereafter this domestic, municipal, and local concern should be subject to the uninformed supervision of a foreign authority. It is a necessary incident to the governmental power of the city to do the things above stated in the construction and control of its streets to make such reasonable provisions for their proper and economic use as its close knowledge of the necessities of the situation and

the structure of the streets themselves demonstrates to be proper. Knowledge of its own conditions might lead a city to construct streets of such heavy material and in such manner in the manufacturing and wholesale sections as to make proper the passage over them of loads heavier than 12 tons, and thus to assist in the advancement of its commercial and industrial enterprises. The object of the home rule amendment was to permit municipalities to use this intimate knowledge and determine for themselves in the exercise of all the powers of local self-government how these and similar local affairs should be conducted." (Ohio Supreme Court, *Froelich vs. City of Cleveland*, 124 Northeastern Reporter, 212.)

Recovery from Surety Company on Contractor's Bond

Where a surety company has signed a contractor's bond, guaranteeing the honest and faithful performance of a construction contract made by him with a municipality and binding the surety company to hold the city harmless from all costs and damages of every kind and nature whatsoever which might flow from the breach of the contract or the contractor's infidelity, and where the contract is grossly violated by the contractor, and the city is swindled out of a large sum of money because of insufficient and defective construction of the work contracted for, the city's expense in whatever courts it was necessary to resort to for the recovery of that sum of money are a proper charge against the contractor's surety under the terms of the bond. (Kansas Supreme Court, *City of Topeka vs. Ritchie*, 184 Pacific Reporter, 728.)

Damage Caused By Sewage

It is an actionable wrong for a municipal corporation to negligently construct or maintain a sewer in such a condition that surface waters are diverted from their natural course and such waters and sewage are permitted to be collected and discharged upon the land of a private individual to his detriment. (Oklahoma Supreme Court, *Oklahoma City vs. Stewart*, 184 Pacific Reporter, 779.)

Liability of City, or County

Defendant municipality is not bound to reimburse the county for the expense of rebuilding bridges within the municipal limits, where the municipality had never assumed control over the structures, which were originally built by the county on



For Heating and Applying under Pressure all varieties of Bituminous Materials, Hot or Cold, for Road Construction Maintenance or Dust Laying.

Heat and volume under instant control of operator. Positive pressure produced by the Kinney Pump.

PATENT COMBINATION Auto Heater and Distributor



HANDY HEATER and SPRAYER

Especially adapted for Road maintenance, construction and general repair work. Contents constantly agitated while heating.

No burning or coking of material. Pump, Piping, Hose, Nozzles, Automatically Heated.

No Steam Required.



Kinney Manufacturing Company

BOSTON, MASSACHUSETTS

BRANCHES:

NEW YORK

PHILADELPHIA

CHICAGO

KANSAS CITY

SAN FRANCISCO

county roads extending thru the town. (North Carolina Supreme Court, Commissioners of Hoke County vs. Town of Reaford, 100 Southeastern Reporter, 513.)

Validity of Sidewalk Assessments

Liens against abutting property for the cost of constructing public sidewalks being of statutory creation, substantial compliance with the statutes prescribing conditions for their enforcement is necessary. The legislative authorities of a city cannot delegate to an officer or committee performance of the legislative function of prescribing specifications for the construction of sidewalks and grades. But the council may delegate performance of such ministerial duties as receiving bids, superintending the work, etc. A contract made by the sidewalk committee of a city council may become the valid contract of the town thru ratification of the committee's action by the council. (Kentucky Court of Appeals, Eisenschmidt vs. Ader, 215 Southwestern Reporter, 48.)

Street Sprinkling Ordinance Valid

A decision of the United States Supreme Court sustains the validity of an ordinance of the city of Sacramento, Cal., which provides that "every person, firm or corporation owning, controlling or operating any street railroad, suburban railroad, or inter-urban railroad upon and along any of the streets of the city of Sacramento, shall, without cost to the city during the months of June, July, August, September and October of each year, and at such other times as may be necessary to keep the dust laid, sprinkle with water the surface of the street occupied by such railroad, between the rails and tracks and for a sufficient distance beyond the outermost rails thereof, so as to effectually lay the dust and prevent the same from arising when the cars are in operation." (Pacific Gas & Electric Co. vs. Police Court, 40 Supreme Court Reporter, 79.)

Validity of Franchises

A franchise to maintain water-mains in streets and alleys, "so long as this contract shall remain inviolate," is invalid as amounting to a perpetual utility franchise. Reserved right in a municipality to forfeit a franchise for breach of its terms by the

holder should be exercised by a repealing ordinance declaring the franchise ordinance void. (Oregon Supreme Court, Newsom vs. City of Ranier, 185 Pacific Reporter, 296.)

Care Required of Motor-Cycle Policemen

Altho a traffic ordinance may exempt motor-cycle policemen from necessity for complying with motor vehicle speed limits, and gives them right of way, still they are bound to exercise due care to avoid colliding with other travelers in a street. It was not necessarily contributory negligence for plaintiff, a motor-cycle policeman, to drive his machine 35 or 40 miles an hour upon a dry street, where there was little traffic there and he was responding to an emergency call to duty. And, unless a jury should find that he was negligent under the circumstances, his driving at that speed will not preclude him from recovery for injuries sustained through a collision attributable to negligence in the manner in which defendant drove an automobile at a street intersection. (Washington Supreme Court, Clark vs. Wilson, 183 Pacific Reporter, 103.)

Village Contract Invalid Outside of Limits

Since the Village Law of New York does not empower the trustees of a village to acquire land beyond the municipal limits for use as dumping grounds, a contract by such authorities to buy land outside the village for that use is not enforceable against the municipality. (New York Supreme Court, Gibson vs. Village of Massena, 178 New York Supplement, 850.)

Right to Municipal Salary

When one has held a municipal office with apparently good right to it until it has been judicially determined that another is lawfully entitled to the office, the latter is not entitled to recover salary from the municipality for the time that the former was in office and received pay. The remedy of one excluded from an office to which he is entitled is to secure an adjudication of his right to the position and sue the person wrongfully holding the office for the full amount of salary received by such person during the time that the aggrieved person



Shale that Machine Cut at 3 Ft. Per Minute

660 Ft. In 3 Hours

During 1915, considered an ordinary year, the city laid 25,000 ft. of 6- and 12-in. mains in hand excavated trenches at a labor cost for digging, laying and back-filling of 28.8c. a foot for the smaller and 36.08c. a foot for the larger size. Much more pipe was laid in 1916 and this year because of the rapid growth of the city. While complete unit costs for the last year's work have not yet been compiled, it is known that rising wages caused considerable increase over those of 1915. Records for 10,000 ft. of 6-in. main laid at one time last year show a total labor cost of 37.1c. per foot, of which digging alone represented 19c. with common labor 27½c. an hour. The trench was in clay, with shale at the bottom. As compared with this, the first performance with the trenching machine, excavating for 1620 ft. of line, was accomplished at a fuel and labor cost of \$132.84, or 8.2c. per foot for actual digging. This was in gravel which required sheeting, the cost of which is included in the above figure. On another occasion, in digging through cut-over land, where many large but partly rotted stumps were cut through, 682 ft. of trench was dug in four hours, at a cost of \$7.55 for three men and 15 gal. of gasoline—only 1.1c. per foot. On Oct. 5 the machine made its speed record of 660 ft. in three hours, but \$3.02 for gasoline and \$1.88 for the wages of the engineer and helper being charged to the operation. This was about ¾ of a cent per foot. Both trenches were in shale at the bottom.

Waterworks Men!

Look to your costs in these days of high prices and wages. The P & H Excavator purchased by the Erie, Pa., Water Dept. (by whom the record shown here was made) returned half its cost on four miles of mains.

P & H Equipment covers every phase of the job from the opening of the trench to getting the backfill back quickly and compactly. Send for general catalog.

PAWLING & HARNISCHFEGER CO.

MILWAUKEE, WISCONSIN

P & H excavators, back-fillers, tampers.

should have been permitted to enjoy the office. (New Mexico Supreme Court, *Wilkinson vs. City of Albuquerque*, 185 Pacific Reporter, 547.)

Restricting Apartment Houses

The Minnesota Supreme Court has nullified a statute enacted by the State Legislature in 1915, so far as it relates to restrictions upon the location of apartment buildings in cities of the first class. (*State vs. Houghton*, Inspector of Buildings.)

The statute provides that such cities might, thru their councils, "upon petition of fifty per cent of the owners of the real estate in the district sought to be affected, designate and establish by proceedings hereunder restricted residence districts within its limits wherein no building or other structure shall thereafter be erected, altered or repaired for any of the following purposes:" Then follows a list which includes numerous lines of business and "apartment houses, tenement houses and flat buildings."

The court, with two judges dissenting, holds that, as applied to apartment houses, the statute attempts unconstitutionally to condemn real estate against use for apartment buildings. The opinion is in part:

"The private owner holds his property subject to the superior right of the state to take it for public use; but it cannot take it except for public use. The payment of compensation gives no right. * * * The right of the owner to use his property as he sees fit, if he does not unjustly injure others, is as much unquestioned as is the sovereign right to take it for public use. * * * Of course the private owner may be restricted in the use of his property without its appropriation by condemnation. He is only one of the community. He must yield to its welfare. He must not use his property so as unnecessarily or unjustly to interfere with others. He must not create a nuisance. His protected private right is subject to the exercise of the police power resident in the state to prohibit, and this without compensation, a use of his property which injuriously affects the public health or safety or general convenience and welfare.

"The use to which the relator purposes putting its property is legitimate. Not all people can live or wish to live in detached houses. Some from choice and some from necessity seek apartments. It is true that apartment buildings are not welcome in exclusive residence districts. Their appearance is not liked. * * * An apartment building does not affect the public health or public safety or general well being so that it may be prohibited in the exercise of the police power. * * *

"When once the principle is announced that a residence district may be created by the

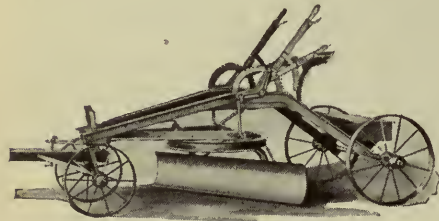
common council upon a majority vote of the owners and the land condemned against the use of the property for an apartment building, the way is open for the condemnation, upon legislative authorization, of property in exclusive residence districts against a use for substantially any class of dwellings then thought to be not in keeping with community surroundings. It may reach the humble and shabby dwelling; for such a dwelling may be found objectionable as readily as an apartment. And when the humble home is threatened by legislation upon esthetic grounds, or at the instance of a particular class of citizens who would rid themselves of its presence as not suited in architecture or in other respects to their own more elaborate structures, a step will have been taken inevitably to cause discontent with the government as one controlled by class distinction, rather than in the interests and for the equal protection of all. It is not believed that the public welfare can be promoted by such legislation.

"We do not overlook nor discourage the tendency to extend the power of restriction of the use of city property thru the exercise of the police power in aid of more wholesome and sanitary living conditions. The housing act of 1917 * * * is an illustration."

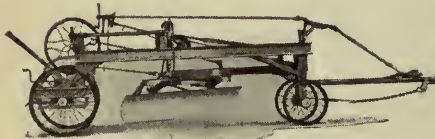
Messrs. Justices Holt and Hallam of the Minnesota court dissented from the majority opinion, taking the view that it was within the power of the State Legislature to determine that the public welfare demanded the restrictions involved in the suits. The dissenting opinion would have supported the statute as a reasonable measure protecting the owner of a detached house on a narrow lot from being walled in by apartment houses constructed up to the lot line, and discouraging extortion under threats to build an apartment house unless near-by owners buy the proposed site at an exorbitant price.

"It is about time," adds the dissenting opinion, "that courts recognize the esthetic as a factor in the affairs of life. Who will dispute that the general welfare of dwellers in our congested cities is promoted if they be allowed to have their homes in fit and harmonious or beautiful surroundings? Besides preserving and enhancing values, it fosters contentment, creates a wholesome civic pride, and is productive of better citizens. City planning by which mercantile and industrial establishments, hotels, apartments and the individual homes are segregated seems to me to be a public need that should invite the hearty coöperation of all the governmental departments. When property rights are taken or affected for

Measure the Strength of a Chain by the Weakest Link



HI-WAY PATROL



MOGUL GRADER

WHEN a mechanic gets a job in the RUSSELL plant he's not there long before he learns the unwritten law of the works—"THE MACHINE MUST STAY ON THE JOB."

No time, trouble, or expense is spared in the never-let-up effort to keep RUSSELL quality where the purchaser wants it. Every precaution skill and experience can devise is taken, to make sure that every RUSSELL product is fit to bear the name. The weak links are very carefully left out.

Examine the pictures and note the "full-measure" design everywhere. You'll find extra strength, over size, and added weight in every part of the RUSSELL grader, because every break-down—every weak link—is a reflection on RUSSELL reputation, and may cost the purchaser time, money, and opportunity.

Get aboard a RUSSELL GRADER and you've got a machine under you that'll come through without a hitch.

The 1920 Catalog—first aid to the road-builder—is ready. A line from you and it's on the way.

Russell Grader Manufacturing Company

MINNEAPOLIS, MINN.

this object there is a taking for a public use."

City Loses Paving Guarantee Suit

In the late case of Dalles City vs. Ætna Accident & Liability Co., 182 Pacific Reporter, 385, the plaintiff sued on a paving contractor's bond, asserting that there had been a breach of the contractor's agreement to repair, for five years, defects in the work attributable to defective workmanship or materials. Reversing a judgment awarded in the city's favor, the Oregon Supreme Court holds that the evidence was insufficient to justify a finding of defective materials or workmanship.

The city placed reliance on the fact that within the five-year period the surface of the street wore out, leaving the concrete base to disintegrate. There was no specific proof as to the character of the materials nor as to the workmanship. Under these circumstances, the Supreme Court said:

"Upon this question we are compelled to agree with the opinion of the United States Supreme Court, as expressed in the case of District of Columbia vs. Clephane, 110 U. S. 212, 3 Sup. Ct. 568. This was an action under substantially the same sort of contract. No evidence was given that the material furnished by defendants was unsound, or that the work was not well done in putting it down. There was evidence that within three years after completion of the work the pavement became so badly broken up and so imperfect as to require extensive repairs. In the opinion, Mr. Justice Miller says:

"His contract was to lay the Miller Wood pavement, a patented invention. Of the capacity of this invention for resisting weather and use, the Board of Public Works, and not he, took the responsibility. * * * The language of this agreement is that if any parts thereof, that is, the pavement, shall become defective from imperfect or improper material or construction, he will repair. No evidence was offered that any of the material was imperfect or improper when placed there, or that any of this construction was improperly or defectively done. We think that this was necessary to enable plaintiff to recover. It will not be presumed, because the work needed repairs within three years, that the material furnished by plaintiff was originally imperfect, or that the construction was not well done."

Negligent Driving of Fire Apparatus

Holding that the city of New Albany, Ind., is not liable for damages resulting from negligent driving of one of its hose

trucks, which was proceeding to a fire, and causing a violent collision with a street car on which plaintiff was riding, the Indiana Appellate Court recently said in the case of Jennings vs. Louisville & Southern Indiana Traction Co., 123 Northeastern Reporter, 835:

"It is the settled law of this state, as well as elsewhere, that a municipal corporation * * * is a government, possessing to a limited extent sovereign powers, which are either legislative or judicial, and which may be denominated governmental or public, and, such powers being public and sovereign in their nature, such city is not liable for a failure to exercise them, or for errors committed in their exercise. In the extinguishment of fires and in making arrangements therefor, the municipality acts in its governmental capacity, and is not liable for damages caused by the negligence of its fire department."

California Street Paving Law

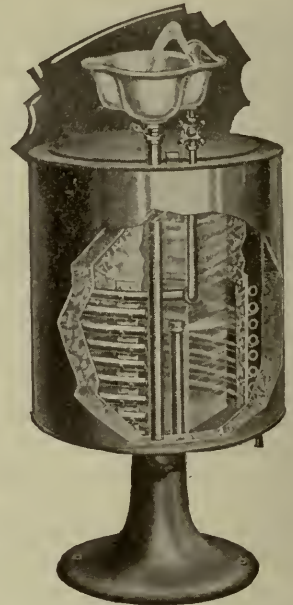
Under the provisions of the Vrooman Act in force in California, street pavement proceedings are invalid unless a map or plat be filed showing the territory to be included in the assessment district, and unless such map or plat be referred to in the resolution of intention to pave. A property owner's failure to object to the proceedings before award of the contract does not preclude him from attacking the validity of the proceedings on the grounds above stated. (California District Court of Appeal, Beck vs. Ransome-Crummey Co., 184 Pacific Reporter, 431.)

Park Pavilion Concessions

Where a city granted exclusive ice cream sales privileges at pavilions, and boating privileges on a lake in a city park, a clause binding the city to furnish "usual and customary music, both as to amount and quality," should be construed as referring to the usual practice of the city at the park, requiring the music to be furnished at the same places as before. The clause is not invalid as amounting to a surrender by the park commission of its power to regulate the park. A city's acts with reference to park property are generally not regarded as an exercise of governmental powers, within the meaning of the rule which prevents a surrender of such powers by officers clothed with them. (Colorado Supreme Court, City and County of Denver vs. Bowen, 184 Pacific Reporter, 357.)

Puritan **CANTONMENT** *DRINKING* *FOUNTAINS*

Designed for and adopted by the Government
for use in cantonments and Naval Training Sta-
tions during the war—now used by the largest
industries and schools.

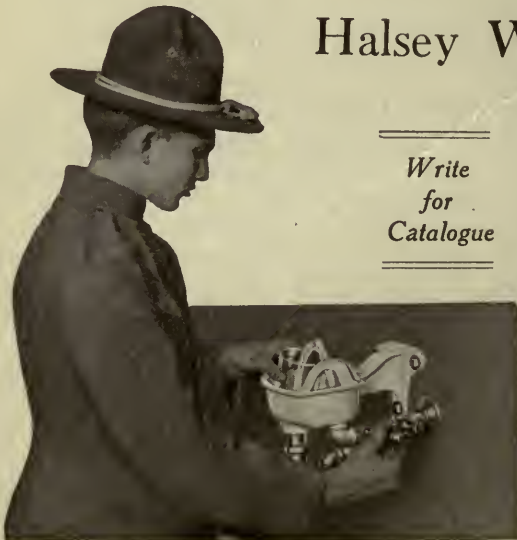


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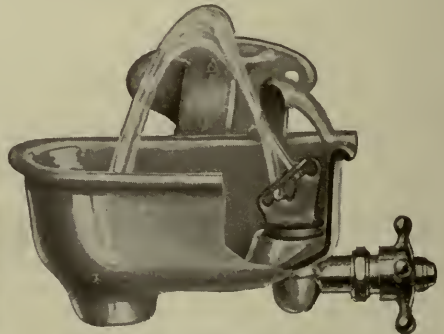
SANITARY—PRACTICAL—FOOL-PROOF

Halsey W. Taylor Company
WARREN, OHIO

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Catalogue*



PURITAN S-566 "CANTONMENT"



Patented

Sectional View of S-566
Showing Practical Drinking Mound
Formed in Stream

Municipal and Civic Publications

See also Department of News and Ideas for Commercial and Civic Organizations

How to Make and Use Graphic Charts.

ALLAN C. HASKELL. Introduction by Richard T. Dana. Codex Book Company, Inc., New York. 1919. 539 pp. Many charts and diagrams.

The excellent presentation of a subject which has been but scantily covered by books in the past will be welcomed by the increasing number of those who are constantly using graphic charts. Written from the viewpoint of the layman as fully as from that of the technical reader, it deals with the theory and construction of the various types of charts, such as rectilinear, logarithmic, semi-logarithmic, polar, isometric, tri-linear and nomographic. Illustrations are given of many of the uses to which these charts may be put. Further uses are covered in the complete references given at the end of each chapter. It will be discovered upon using this book that graphic charts are fully as useful in making calculations and obtaining information with little effort as in presenting information in a form which may be readily grasped.

A Manual of Hygiene and Sanitation.

SENECA EGBERT, A. M., M. D. Lea & Febiger, Philadelphia and New York. 1919. viii + 554 pp. Illustrated. Seventh edition.

A concise compilation of medical data covering the field of hygiene and sanitation. Essentially a physician's book, which will also prove of value to the health officer.

Eradicating Two Great Insect Pests.

A program for ridding the country of the Mexican cotton boll weevil and the important European corn borer. December, 1919. 16 pp. (Published by the Gage-Pierce Research Laboratories, Denver, Colo.)

Michigan Excess Condemnation Act.

An amendment to the constitution of the state of Michigan as adopted by the Legislature in extra session 1919, to be submitted to the vote of the people, November, 1920. Published by the City Plan Commission, Detroit, Mich., November, 1919. 7 pp. (Apply to the Commission.)

Self-Supporting Community Houses.

"Can Education and Recreation be Provided in Self-governing and Self-supporting Community Houses?" 1919. 4 pp. By Professor James Ford, Department of Social Ethics, Harvard University. (Apply to National Conference of Social Work, 815 Plymouth Court, Chicago, Ill.)

Municipal Sanitation.

Recommendations of the Bureau of Sanitary Engineering of the Texas Board of Health, issued for the city officials of Texas. 1919. 18 pp. (Apply to M. E. Clark, Secretary of the Bureau, Austin, Texas.)

Hare System of Proportional Representation.

A statement of the principles of the system with illustrative examples of its use. November, 1919. 12 pp. (Apply to C. G. Hoag, General Secretary-Treasurer, 801 Franklin Bank Building, Philadelphia, Pa.)

Municipal Court Reform for Detroit.

"A Few Facts and Reasons Why." Outline of the proposed court reform measure. Published by the Detroit Citizens League, 1001-4 Dime Bank Building, Detroit, Mich. October, 1919. 16 pp. (Apply to the League.)

Advanced Fire Instruction.

New York Fire College Extension Course and supplement to the Edition of Fire Department Promotion Examination Instruction. 1919. 248 pp. (Apply to Civil Service Chronicle, 23 Duane St., New York.)

Probation Needs in the Magistrates' Court in the City of New York.

Showing that the number of arraignments, convictions and probationers have been increased, but there has been no increase in the Probation Staff. September, 1919. 19 pp. By Edwin J. Cooley, Chief Probation Officer, New York City.)

Milk.

PAUL G. HEINEMAN, Ph. D. W. B. Saunders Company, Philadelphia and London. 1919. 684 pp. Illustrated.

A very complete volume covering the field of the physical properties of milk, the physical and chemical examination of milk, and its adulteration, as well as the transmission of disease by milk. The beneficial effects of certified and pasteurized milk and the control of milk supplies is well discussed in two chapters. The economic aspect of milk production and the relation of milk to infant feeding cover an interesting field. The production of other dairy products is covered in the closing chapters.

Wealth from Waste: Elimination of Waste a World Problem.

HENRY J. SPOONER, G. E., F. G. S. George Routledge & Sons, Ltd., London. 1918. 'vi + 116 pp.

A complete volume covering the losses due to waste of time, and how it may be eliminated; the waste due to mismanagement; the wastage of life, limb and health, and its economic effect; waste due to adulteration; the utilization and reclamation of waste land; and waste due to afforestation. The second part of this volume takes up the question of household wastes and economies, and trade, industrial and other wastes.

The Transit Problems of New York City.

An analysis of the difficulties in the way of the continuation of the policy of private ownership and operation, and the obstacles to be removed in preparation for successful public ownership and operation. Prepared by Delos F. Wilcox. November, 1919. 28 pp. (Apply to Delos F. Wilcox, 73 Gleane St., Elmhurst, L. I.)

The Street Surface Railway Franchise of New York City.

The history of railways incorporated between 1850-1897. By Harry James Carman, Ph. D., Instructor in History, Columbia University. 1919. 259 pp. (Published by Columbia University. Longmans, Green & Co., Agents, New York.)

List of References on Vocational Education.

Prepared in the Library Division, U. S. Bureau of Education. August, 1919. 16 pp. (Apply to the Bureau, Department of Interior, Washington, D. C.)

Motor Apparatus Instruction.

A technical description of the 30 types of motor apparatus in use in the Fire Department, New York City, as officially taught in the New York Fire Department Automobile School. 1919. 96 pp. By Captain Daniel A. Sullivan, formerly instructor of the New York Fire Department Automobile School. (Apply to Civil Service Chronicle, 23 Duane St., New York.)

Los Angeles City School System.

"Our City School System." Recommendations of the Municipal League of Los Angeles and excerpts from addresses by prominent California Educators regarding the efficient education of children. December, 1919. 20 pp. (Apply to the League, 429, 433 Merchants National Bank Building.)

Standard Forms of Law for Social Hygiene.

The forms herein presented have been prepared by the Law Enforcement Division of the Commission on Training Camp Activities for presentation to the legislatures of the various states. 1919. 32 pp. (Apply to Sanitary Corps, U. S. A., Room 303, 1800 Virginia Building, Washington, D. C.)

School Medical Inspection.

Why schools need medical inspectors and what the minimum requirements are for acceptable school physicians, are told in an 8-page reprint (No. 554) from the Public Health Reports. 1919. (Apply to the U. S. Public Health Service, Washington, D. C.)

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Vocational Education.

Third Annual Report of the Federal Board of Vocational Education. In two volumes: I, Vocational Education; II, Vocational Rehabilitation. 256 and 65 pp. respectively. 1919. Covering the activities of the Board and the progress made by the states for the fiscal year ended June 30, 1919. (Apply to Government Printing Office.)

A Half-Time Mill School.

By H. W. Foght, Specialist in Rural School Practice. 23 pp. Illustrated. Bulletin, 1919, No. 6, U. S. Bureau of Education. (Apply to Government Printing Office, Washington, D. C.)

Engineering and Town Planning.

"Some Aspects of Engineering in Relation to Town Planning," by Edward Willis. Paper read at the meeting of the Town Planning Institute, November 21, 1919, with discussion thereon. Vol. VI, No. E. Quarto, 42 pp. Published by the authority of the Town Planning Institute, 4 Arundel Street, London, W. C., Eng.

Road Work in North Carolina.

Biennial Report of the State Highway Commission of North Carolina for the years 1917 and 1918. Published 1919. Views, maps, tables and diagrams. 87 pp. (Apply to W. S. Fallis, State Highway Engineer, Raleigh, N. C.)

City Planning Needs of Omaha.

Report of the City Planning Commission of Omaha to the City Council, October 1, 1919. Quarto. 41 pp. Maps, views and diagrams. Published to explain the nature and purposes of improvements covered by ordinances recommended to the City Council and to be voted on by the city at the election in April, 1920. Harland Bartholomew is consultant on the plans. (Apply to B. Kvenild, Secretary of the Commission.)

Control of Venereal Diseases.

"Public Health Service Program for Nation-wide Control of Venereal Diseases." By C. C. Pierce, Assistant Surgeon General, United States Public Health Service. 1919. Reprint No. 524 from the Public Health Reports, May 16, 1919. 8 pp. (Apply to Government Printing Office, Washington, D. C.)

Department of Engineering, Hartford, Conn.

Twelfth annual report, for year ending March 31, 1919. 42 pp. Illustrated. (Apply to Roscoe N. Clark, City Engineer, Hartford, Conn.)

Bureau of Highways, Philadelphia, Pa.

Illustrated annual report for the year ending December 31, 1918. 143 pp. (Issued by Bureau of Highways, Department of Public Works, Philadelphia, Pa.)

Check List of Electoral Procedure.

Prepared for Election Day, 1919, as an aid to election officers and watchers by the Honest Ballot Association, Inc., 18 West 34th Street, New York, N. Y. 12 pp.

Parks and Grounds for Niagara Falls, N. Y.

Typewritten report by Olmsted Brothers, landscape architects, Brookline, Mass., describing their plan for a comprehensive system of parks for Niagara Falls. 1919. 43 pp.

Referendum on Report of Taxation Committee, Jersey City Chamber of Commerce.

The recommendations of the Committee on Taxation, with arguments opposed and in favor, are included in a 12-page pamphlet recently submitted to the members of the Jersey City Chamber of Commerce. 1919. (Apply for copies to the Secretary-Manager, Willard G. Stanton, Jersey City, N. J.)

MUNICIPAL REPORTS

Cincinnati, Ohio.—Annual Report of the Water-Works for the years 1917-1918. (Apply to Charles F. Hornberger, Director of Public Service.)

Los Angeles, Calif.—Tenth Annual Report, Board of Public Utilities; July 1, 1918—June 30, 1919. (Apply to R. E. Wirshing, President of the Board.)

Chicago, Ill.—Annual Report of the Department of Gas and Electricity for the year 1918. (Apply to William G. Keith, Commissioner.)

Louisville, Ky.—Annual Reports of the President and Superintendent of Maintenance, Board of Park Commissioners; fiscal year ended August 31, 1919. (Apply to Harry G. Evans, Secretary of the Board.)

Boston, Mass.—Fifth Annual Report of the City Planning Board; year ending January 31, 1919. (Apply to Elizabeth M. Herlihy, Secretary of the Board.)

Solving the Traction Problem.

An address delivered by Delos F. Wilcox, Ph. D., at the tenth anniversary of the New York State Conference of Mayors and Other City Officials at Schenectady on June 12, 1919, discusses the cost of street railway service and fare increases, and advocates municipal ownership. 20 pp. (Apply to Delos F. Wilcox, Ph. D., Elmhurst, L. I.)

Thompson Plan for People's Ownership of Street Railway Systems.

The plan of Hon. William Hale Thompson, Mayor, submitted to the Chicago City Council on September 9, 1919, advocating people's ownership and operation of street railway systems at a 5-cent fare, is described in a 22-page pamphlet. (Apply to James T. Igoe, City Clerk, Chicago, Ill.)

Provision for Art, Music and Drama in Memorial Buildings.

Bulletin No. 6 of the series entitled "Community Buildings as War Memorials" presents an illustrated article which originally appeared in slightly different form in the January, 1919, issue of THE AMERICAN CITY. Community art activities, the theater in memorial buildings, "little theater" stages, provision for moving pictures, the music room, the art exhibition room and memorial art buildings are discussed. 1919. 20 pp. (Published by the Bureau of Memorial Buildings, War Camp Community Service, 124 East 28th Street, New York, N. Y.)

The Health Adviser.

The University of Illinois publishes for newspapers only a weekly clipping sheet of interesting and timely news items relating to health, hygiene and sanitation. (Apply to Department of Hygiene and Public Health, University of Illinois, Urbana, Ill.)

The Housing Problem in Germany.

Present conditions of housing in Germany, measures proposed for remedying defects, and some account of the past history of housing in Germany are included in an 89-page pamphlet report prepared in the Intelligence Department of the Local Government Board, London, England. 1919. (Write to His Majesty's Stationery Office, Imperial House, Kingsway, London, W.C. 2, England.)

Elementary Adult Education in Los Angeles City Schools.

The story of the work of the Department of Immigrant Education and Elementary Evening Schools since its beginning three years ago. 1919. 88 pp., illustrated. (Write to Albert Shiels, Superintendent of Schools, Los Angeles, Calif., for School Publication No. 27.)

The Malaria Problem of the South.

The prevalence of malaria in the South, its cause, and methods of control are chiefly dealt with in Reprint No. 552 from the Public Health Reports. 1919. 11 pp. (Apply to the U. S. Public Health Service, Washington, D. C.)

A Building Zone Plan for Detroit.

A preliminary explanation of what this proposed building zone plan will accomplish for Detroit, and a statement of the nature of the zoning regulations of similar plans in other cities. Published by the City Plan Commission, Detroit, Mich., November, 1919. 20 pp. Illustrated. (Apply to the Commission.)

Relief Plan for Disasters.

Method of procedure in relieving the suffering caused by a disaster in peace time, including record forms for the identification of the inhabitants. 1919. 41 pp. (Apply to The American Red Cross, Department of Civilian Relief, Washington, D. C.)

Saskatoon, Sask.—Annual Report of the City Commissioner, 1919. (Apply to C. J. Yorath, City Commissioner.)

Lincoln, Neb.—Report of the Water and Light Departments. 1919. (Apply to William Schroeder, Superintendent of Parks and Public Property.)

Philadelphia, Pa.—Annual Report of the Bureau of Surveys, Department of Public Works for the year ending December 31, 1918. (Apply to Chester E. Albright, Chief Engineer and Surveyor.)

Newark, N. J.—Annual Report of the Shade Tree Division of Parks and Public Property, for year ending December 31, 1918. (Apply to Carl Bannwart, Superintendent of the Division.)

Dayton, Ohio.—The 1919 report of the Department of Public Welfare. (Apply to D. F. Garland, Director.)



Worthington Tractor and Shawnee Triple Mower

For Catalogue and Information address

SHAWNEE MOWER COMPANY

Shawnee-on-Delaware, Pa.

**Rundle - Spence "Vertico - Slant"
Overcomes All Objections**

The "VERTICO - SLANT" is the very latest feature in modern drinking equipment. The stream bubbles out at a practical and convenient angle. Lips cannot touch jet—water cannot fall back. Drinking fountain experts proclaim this fountain as sanitary in every respect — overcoming every objection to the old bubbler type. Ideal for schools, public buildings, parks and streets.

Send address for illustrated descriptive matter treating on the subject of sanitary drinking fountains.



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Wisconsin

**PURO LIBERTY-
DRINKING
FOUNTAIN**



Pat. Pending

Can be used as
a Glass Filler

ONLY Sanitary Drinking Fountain
PURO SANITARY DRINKING
Haydenville FOUNTAIN CO. Mass.

Methods, Materials and Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

The G. E. Water Flow Meter and Integrating Recorder

The measurement of the output of a pumping plant, the water consumed by a municipality or distributed to different sections, and the discovery of the cause of sudden fluctuations of flow which cause dangerous water-hammer, are among the many problems which confront municipal water-works. In order to make a complete study of these problems and to solve them, a simple, practical and dependable measuring and recording device is necessary. The General Electric Company, Schenectady, N. Y., has on the market at present a flow meter which is adapted to this service as well as to measuring the amount of feed water



A COMPACT INTEGRATING RECORDER

delivered to boilers, the amount of cooling water used in condensers, the slippage in pumps, and the losses due to leak in water-mains. The flow meter consists of a nozzle, which is a metal funnel inserted between and held in place by two flanges of a pipe. No plug nor Pitot tube is used. The approach portion of the nozzle has been so made that eddies and disturbances are reduced to a minimum in the throat portion, and both the approach and the throat portions are carefully machined to dimensions. The recording device is actuated by means of a float carried on a differential

mercury gage. The device gives a graphic record as well as a record of the total flow thru the meter. The chart is calibrated in arbitrary units from 0 to 10, and furnished with a multiplying constant to be used to reduce the chart readings to values representing the flow in gallons per minute.

Economy in Street Lighting and Trolley Pole Equipment

There is an increasing appreciation on the part of municipal and traction officials of the value of uniting the trolley poles and street lighting units with the attractive brackets which are now available. Material economy is effected thru the elimination of the second set of poles. In addition to such poles the Electric Railway Equipment Company of Cincinnati, Ohio, manufactures single-light standards, as shown in the accompanying illustration. It is stated that a 30-foot pole of the tubular type, made up of 6-inch, 5-inch and 4-inch sections, will weigh about 50 pounds less than many forms of metal pole providing the same strength. These poles are made of the best open hearth steel, and are constructed with joints which insure that they will be non-telescopic.



Barber Asphalt Company's Iroquois Line

In addition to the sale of Trinidad Lake asphalt the Barber Asphalt Paving Company, Philadelphia, Pa., manufactures at its Iroquois Works a complete line of asphalt machinery.



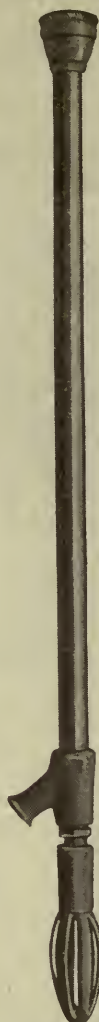
AN IROQUOIS ASPHALT SURFACE HEATER



Chief Coots

POPULAR Chief Coots of Indianapolis introduced 'NOBBIES' in the Hoosier Capital more than seven years ago.

That 'NOBBIES' have a clean record for satisfaction is shown by their use on the heavy fire fighting apparatus of such cities as Chicago, Detroit, Grand Rapids, Augusta, Sioux City, Chattanooga, and many others. Performance counts.



Spray Gun Saves Two Men

Bean Spray Gun with one line of 5-8 inch hose on *biggest power sprayer* permits *one man* to do work of *two or three*, with ordinary spray rods and nozzles. Think of time, money and labor saved!

Throws full fog and long distance sprays and is controlled with simple turn of wrist.

Durable, efficient, easy to clean, and can be carried anywhere.

Best for all park spraying.

BEAN Spray Gun

Write us for free folder fully descriptive of features.

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Exact Size.

EDEXCO GLASS HEAD MAP PINS

Will Not Peel or Chip
For Use on Maps and Charts.
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Plotting Papers for Charts
To show the state of work in progress.

Send for Free Sample Package containing Map Pins and other Map marking devices, sample EDEXCO Map Mount, Charting Papers, Curve Cards and Catalog of Supplies for making GRAPHIC RECORDS. Catalog alone sent free if desired.

Educational Exhibition Company
327 Custom House St.,
Providence, R. I.



A NEW AND EFFICIENT METHOD OF MOWING LAWNS

Triple Mowers for Park Lawns

Among the many interesting features of the Shawnee Triple Mower, manufactured by the Shawnee Mower Company, Shawnee-on-Delaware, Pa., are the following: it does not harden the surface of the ground; it cuts a swath over 7 feet wide; it pulls easier than other mowers; it cuts the grass evenly to any length desired and operates well over rough ground. The forward section of the mower can be detached from the rear section, thus making it a complete Sulky mower of 30 inches swath for service in contracted areas around shrubs, paths or trees. This mower is designed for use with a horse, or may be attached to a low-power tractor, as shown in the accompanying illustration. The latest model is equipped with an all-steel, riveted frame, making the machine practically indestructible.

Fire Hydrant Features

A number of interesting points of advantage are claimed by the Eddy Valve Company, Waterford, N. Y., manufacturers of the Eddy fire hydrants. The company believes that many of the points should appeal to experienced water-works engineers.

A damaged valve can be replaced in a few minutes and at slight expense, and if the cover or stand-pipe itself is broken no loss or damage occurs from the waste of water, as all parts remain in place. There is a large waterway around the valve when it is open, and for this reason excellent efficiency is obtained under fire conditions. The hydrant stems cannot be bent while using them, as the end engages in a threaded nut in the bottom of the hydrant, thus placing the stem only in tension and torsion. The drip rod for draining the hydrant is at the side of the stand-pipe and independent of the stem. It can be readily adjusted and can be easily removed from the stand-pipe without interfering with the valve. The drip is auto-

matic and positive in its action, and drains practically all of the water from the stand-pipe. With no water remaining in the stand-pipe, it is impossible for the hydrant to freeze. As a positive check on the proportionate opening of the hydrant valve, the stem is made to raise or lower, indicating the position of the valve at all times. It is further claimed that for the purpose of flushing out the mains this hydrant has no equal, because anything which can pass the valve opening can readily pass out of the stand-pipe. In order to make repairs no digging is necessary, for by simply taking off the cover of the stand-pipe one man can readily remove the works part and make any necessary substitutions, no derrick or hoist being required for the work.

Roads Machinery Company Moves Offices

The Good Roads Machinery Company, Inc., Kennett Square, Pa., has announced the removal of its general offices from Kennett Square, Pa., to 821 Bulletin Building, corner Filbert and Juniper Streets, Philadelphia, Pa. This company has made a special request that all communications be addressed to the Philadelphia address.



THE EDDY HYDRANT



Bracket 10347 and
C. E. Novalux Unit Form 4

THE ONLY WAY

To Obtain an Ornamental
Lighting System and
Retain Overhead
Wires

ELRECO COMBINATION POLES

serve the double purpose of Ornamental Lighting Standards and Trolley Wire Supports.

Handsome brackets for supporting very latest Novalux Lighting Units or the Ornamental Luminous Lamps improve the appearance of the plain Trolley Poles.

You can string your wires along the top of the poles, where they are practically unnoticeable and out of the way of traffic.

You save the cost of additional lamp standards and underground construction, and avoid further obstruction of the curb line.

Catalog E describes this money-saving plan and full details—free.



Combination Pole
and
Ornamental G. E.
Luminous Arc

Electric Railway Equipment Co.

Cincinnati, Ohio

New York Office—30 Church Street



COOLING SYSTEM USED AT THE POWER PLANT OF THE BOBO OF EPHRATA, PA.
TAKEN WITH POOL EMPTY TO SHOW CONSTRUCTION

Nozzle for Cooling Condensing Water

The Spraco cooling system, illustrated in the accompanying photograph, is a simple and economical device for cooling water used in condensers, transformers, evaporators and other equipment where the conservation of the water-supplies is necessary. The hot water from the various systems is cooled by spraying thru specially designed nozzles giving a finely divided spray at low pressure. The cooling is effected by evaporation, radiation and convection, and the water which falls into an artificial or natural pond is sufficiently reduced in temperature to permit its being used over again almost immediately. The advantages claimed for the Spray system over the cooling tower are low initial and maintenance cost, greater saving in power required for operation, longer life and greater flexibility, and a reduction in water losses.

Studebaker Dump-Wagon Business Sold

Announcement has recently been made that the dump-wagon business of the Studebaker Company has been sold to the Western Wheeled Scraper Company, of Aurora, Ill. This company will continue to manufacture the Studebaker model dump-wagon and will furnish extra parts and repair parts for them. The Studebaker Company expresses its appreciation of the dump-wagon business which it has handled in the past and bespeaks the good will of its customers for the Western Wheeled Scraper Company, as an institution which will give them the same service and fair deal which they have previously received from Studebaker.

New Consulting Engineering Partnership Announced

Announcement has recently been received stating that William R. Conard and J. Stewart Buzby, who for a number of years has been actively associated with Mr. Conard as principal assistant, have formed a partnership for the continuation of the business of inspection and tests of materials, with special relation to water-supplies and gas works and to the making of reports, the framing of specifications and the practice of general engineering under the name of Conard & Buzby, Burlington, N. J. The announcement states that the aims and purpose of the firm will remain as high and broad as before, with the scope of activities increased by all legitimate means.

New High-Duty Fire Engine Proving Popular

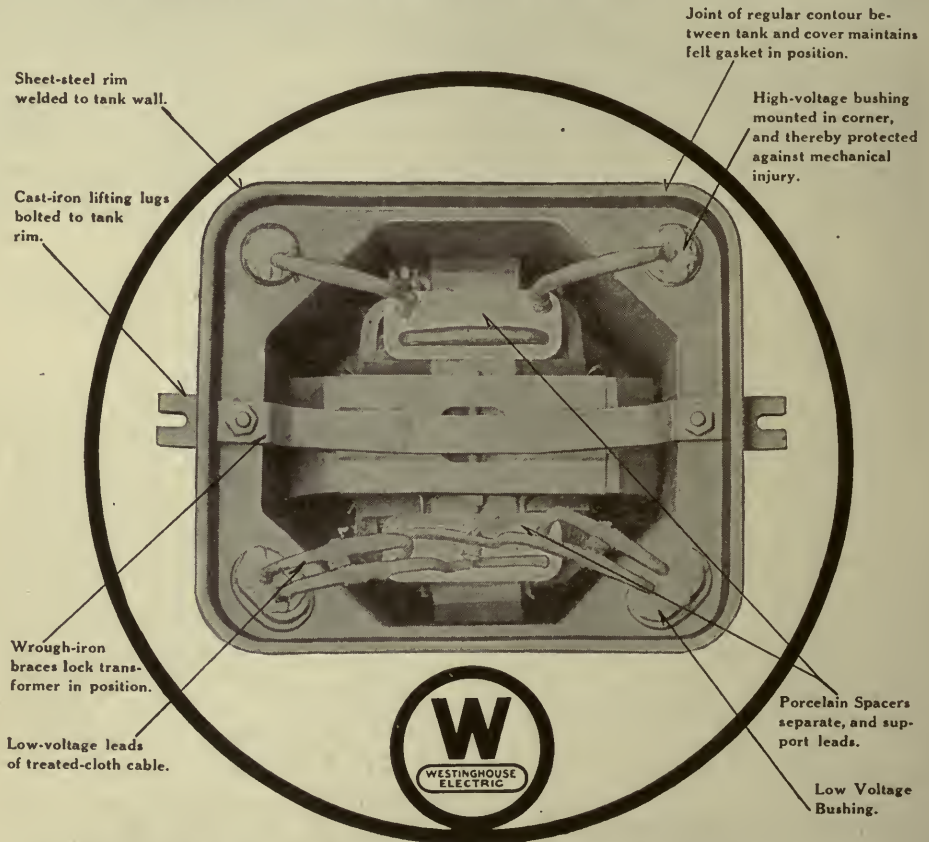
There has been constantly increasing interest shown by municipalities in the sound construction and dependability of the new Stutz high-duty fire engine ever since its demonstration at Kansas City, Mo., last June. Recently contracts have been closed with the city of Wichita Falls, Tex., for three pieces of motor apparatus, and with the city of Frankfort, Ind., for one pumping engine, by the Stutz High Duty Fire Engine Company, Indianapolis, Ind.

Richardson Phenix Opens Southern Office

The Richardson-Phenix Company, Milwaukee, Wis., has announced the opening of a Birmingham office at 306 American Trust Building, Birmingham, Ala., in charge of James D. Scruggs, who will be District Manager of the Southern office.

Steel-Clad Type S Distribution Transformers

are simple in construction and reliable
in operation, as well as light in weight



Top View (cover removed) of small-capacity Steel-Clad Transformer. Note simple lead arrangement, reliable mechanical details, freedom for oil circulation, and ease of inspection.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.

Westinghouse



A GRAPHIC ILLUSTRATION OF THE VALUE OF ROAD SIGNS

Standard Signs for Railroad Crossings

New York State law requires a standard sign to mark the approaches to railroad crossings. The design is distinctive and is now manufactured by a number of companies. The Stonehouse Steel Sign Company, 17th and Lawrence Streets, Denver, Colo., manufactures embossed steel signs of different types and prices to comply with the New York specifications and designs. These signs are manufactured in different styles, such as with Radio enamel used on the white quartering, so that the entire sign is perfectly readable by day or night. The accompanying illustration shows the clarity of the sign and how it stands out at any railroad crossing, warning vehicular traffic against the danger of approaching trains.

The Latest Contribution to Motor Truck Design

Early in December about two hundred members of the Detroit and Cleveland sections of the Society of Automotive Engineers held a two-days' session at Akron, Ohio. The visitors witnessed a demonstration of a new development in truck design—the tandem axle construction, which has been developed by the Goodyear Tire & Rubber Company of that city. This "six-wheeled" truck has four wheels in the rear, as shown in the illustration. It was driven over roads of various conditions, and the results proved a pleasing surprise to the designers and visitors. The Goodyear Company is very optimistic for the future of this truck, as well as for the even more rapid development of long-distance hauling by motor truck.



THIS TRUCK MARKS AN EPOCH IN MOTOR TRANSPORT. IN A FEW YEARS WE MAY SEE PRACTICALLY ALL EXCESSIVE LOADS CARRIED ON TRUCKS WITH 6 WHEELS

Adequate and ornamental street lighting is an essential feature of every progressive city



Pittsburg

is the leading iron and steel manufacturing city of America. It produces one-fourth of the country's pig-iron and over half its steel.

Pittsburg's splendid residential district is well worthy of the wealth its industries have developed and the taxpayers can afford the best in the line of city improvements.

G-E Pendent Novalux Fixtures will Light Pittsburg's Streets

The Duquesne Light Company, of Pittsburg, has just ordered 2500 G-E Form 6 Pendent Novalux street lighting units for lighting the city's residential district.

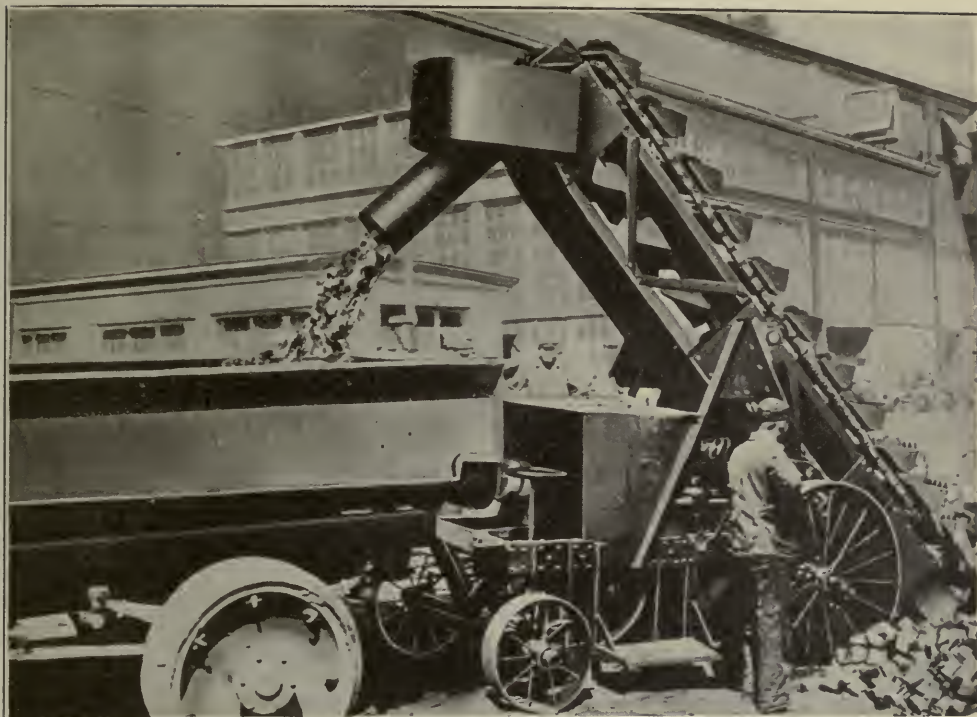
These fixtures are fitted with the type of diffusing globe which has proved popular in hundreds of similar installations. These globes give a soft but adequate illumination over a broad area, producing the effect of an evenly lighted street without heavy shadows or objectionable glare.

Our street lighting specialists, located in every district office, can solve any problem of street illumination. To consult them involves no obligation.

General Electric
General Office  Schenectady, N.Y.
Company

Sales Offices in all large cities

35-4



WAGON LOADER CLEANING UP THE DEBRIS WHEN THE U. S. CAST IRON PIPE & FOUNDRY COMPANY DEMOLISHED ONE OF ITS CUPOLAS

Haiss Wagon Loader Tackles Difficult Job at Burlington, N. J.

Recently it became necessary to demolish one of the cupolas at the foundry of the U. S. Cast Iron Pipe and Foundry Company, Burlington, N. J. The debris which resulted consisted of brick with some lime and cement. In order to expedite the removal of this material, a Haiss path-digging wagon loader, manufactured by the George Haiss Mfg. Co., 143d Street and Rider Avenue, New York City, was put to work. The accompanying photograph shows the machine digging into this difficult proposition. The machine has been in operation at the plant approximately five or six months for handling coal, ashes and sand, and has given very satisfactory service. The swivel spout attached to this loader, instead of being a plain chute, is so designed that it can be moved 180 degrees and allows the material to be discharged on either side of the machine, as well as in the front.

Texas Branch of Bowser Company Organized

S. F. Bowser & Co., Fort Wayne, Ind., manufacturers of gasoline safety storage tanks, has organized a subsidiary company to be known as S. F. Bowser & Co. of Texas, for the sale and distribution of Bowser products in that state and parts of the adjoining states of Oklahoma, Arkansas and New Mexico.

Sinclair Establishes Asphalt Sales Department

Announcement has recently been made by the Sinclair Refining Company, Chicago, Ill., that an Asphalt Sales Department has been established to handle the output of the Meraux, La., refinery. The plant will be devoted exclusively to the production of refined asphalt from specially selected heavy Maltha from the Panuco field in Mexico. E. F. Fitzpatrick has been appointed manager of the newly-created asphalt sales department, and J. M. Woodruff, formerly manager of the publicity and paving departments of the Standard Asphalt & Refining Company, will be Mr. Fitzpatrick's assistant.

Ledoux to Resume Consulting Practice

J. W. Ledoux, formerly Chief Engineer of the American Pipe & Construction Company, has announced that in order to adequately take care of his consulting engineering practice he has resigned from his position as Chief Engineer, and since January 1, 1920, has been established as a consulting engineer specializing in reports, designs and supervision of construction of water-works and water-power development, valuation, arbitration, rate cases and testimony, at 112 North Broad Street, Philadelphia, Pa.

UNION METAL LAMP STANDARDS

Prevent "Lamp Post" Accidents

Such accidents as the ones here pictured and described are impossible where Union Metal Lamp Standards are used. The post, shaft and head are separate units held together by three steel tie rods and all anchored firmly to the sub-base. This construction coupled with the pressed metal shafts, will resist the most severe shocks and blows which would instantly wreck any other type of standard.

Every cast iron lamp post constitutes a liability for accident, and one damage case might easily cost the city or other owner more than the entire lighting system. Union Metal Standards with the unbreakable pressed metal shaft are the only safe standards for city lighting.

The Union Metal Mfg. Co.

Largest and Oldest Manufacturers of Ornamental Lighting Standards

CANTON, OHIO

Put Safety First in
Your Lighting System

Write for Our Booklet

"Ornamental
Street Lighting"



F-W-D trucks are easiest to handle. They steer like a passenger car with the front wheels only. With load and power distributed on all four wheels, stresses are equalized, longer truck life result. Write for details.

The boys from the
Front will tell you

The Four Wheel Drive Auto Co., Dept. 106, Clintonville, Wis.
Canadian Factory: Kitchener, Ont.

Town Fire Apparatus

The question of securing adequate fire protection thru the use of motorized apparatus is one which is stirring the minds of prominent citizens and fire department officials in many small towns. It is appreciated that hand-drawn apparatus, or even horse-drawn apparatus, for small town and volunteer fire departments is inadequate, particularly when the places to be covered by the department are away from the center of the town.

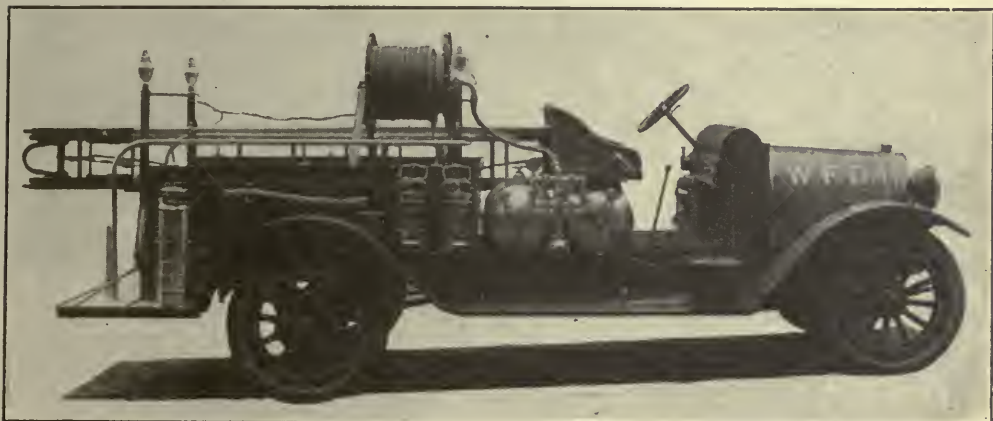
The O. J. Childs Company, Utica, N. Y., manufactures single- and double-tank combination chemical and hose cars, which may be mounted on Reo, Ford and other trucks. The complete equipment includes one or two 35-gallon chemical tanks complete, automatic reel for 250 feet of chemical hose, with nozzle, extension ladders, roof ladders, lanterns, torches, extinguishers, axe crowbars, pike pole, play-

protection, power and process piping, steam, hot water and gas heating, drying, sales of pipe fittings, valves and supplies.

Pratt & Cady Opens New Branches and Increases Line

Announcement has just been made by Pratt & Cady Company, Inc., of Hartford, Conn., of the appointment of E. Coit Magens, as Director of Sales; O. Lamson Beach, as Manager, Metropolitan Store, 259 Canal Street, New York City; Quay T. Stewart, as Sales Representative, Minneapolis, Minn.; Henry J. Bride, as Sales Representative, Hartford, Conn.; also the opening of branch stores at 529-531 Arch Street, Philadelphia, Pa., H. H. Freund, Jr., Manager; 505 Mission Street, San Francisco, Calif., C. R. Mendelson, Manager.

In addition to its well-established lines of re-



A DOUBLE-TANK COMBINATION CHEMICAL AND HOSE CAR USED IN WELLSBORO, PA.

pipe holders and additional chemical charges for the tanks. This equipment has proved very satisfactory in many cities and towns, and the accompanying illustration shows one of these double-tank combination hose cars mounted on a Reo truck which is in use at Wellsboro, Pa.

Grinnell Company Takes Over General Fire Extinguisher Business

On January 1, 1920, all the sales and contracting business which had formerly been carried on by the General Fire Extinguisher Company was taken over by the Grinnell Company, Inc. This change was made because the old name so specifically described the automatic fire protection section of the company's business that it prevented any assumption on the part of the public that the company was engaged in several closely related lines of business.

The business from which the Grinnell Company, Inc., has evolved was founded in 1850 and now includes the general lines of fire

newable disc globe valves, renewable seat gate valves, asbestos packed cocks, the company now also manufactures the Davis & Berryman line of feed water heaters, hot water generators and power pumps, having purchased this business from I. B. Davis & Son, the original manufacturers.

A very interesting folder entitled "Take the Hobbles off Production" is being published by Pratt & Cady. This folder is issued in the interest of a movement to perpetuate the good work started by the Government during the war to reduce the high cost of production by standardizing manufacturing processes. It is to the advantage of the manufacturer as well as the consumer to discourage the use of special sizes or designs, which in many cases vary only slightly from standard goods shown in the catalog. It costs more money to manufacture specials, it upsets manufacturing schedules, retards production, and requires the time of labor, which in these days is scarce and high priced. Purchasers should bear this in mind and endeavor in every way to secure standard goods from manufacturers in every possible case.



The Strength of Universal Service

"Behold the power of unity," declares the father to his sons, in Aesop's fable concerning the strength in a bundle of sticks as compared with the weakness in a single stick.

This "Power of Unity" is of absolute necessity to the strength of nations and of business. It is unity of service which is the strength and value of the Bell telephone organization.

If all your telephone conversations were to be forever with but one person, a single line would meet all of your needs, but nation-wide service requires the cooperation of all those served as well as of all those serving.

The daily operation of the telephone for usual, local calls; its vitally important operation for the less-frequent long-distance calls; both dependent upon the coordinated efforts of subscribers and telephone operators.

Moreover, in these days of high costs, an economic and universal service requires from each individual subscriber his financial and moral support.

Each community must support its telephone facilities to the best of its ability, if both it and the rest of the country are to receive the fullest benefit.



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Town Planning in the Devastated Regions of France

By George B. Ford

[City Planning Adviser, La Renaissance des Cités, Paris, France]

IT is generally known that on March 14, 1919, the French Parliament voted a compulsory town planning law. In the devastated regions there are at least 2,600 towns and villages for which new town plans must be made and approved before any permanent reconstruction can be authorized. During 1919 practically no permanent reconstruction was started, except for the rebuilding of certain factories in the North.

During the last two months of 1919 I made an investigation for La Renaissance des Cités of the progress of town planning in these 2,600 towns and villages. At least a thousand of them had not yet succeeded in finding anybody who could make their plans for them, for all the architects, engineers and surveyors are already loaded down with more work than they can handle.

Up to December 31, 1919, about four hundred plans had been made and approved by the local town councils and submitted to the Préfet of the Department. It was estimated that nearly a thousand or more plans were in preparation. As soon as these plans were received at the Préfecture the Préfet would announce that he would open a public hearing in the village on such and such a date. These public hearings, according to the law, continue for fifteen days. Up to December 31, 225 plans had been presented at public hearings, and about 65 plans had been returned to the

Préfecture with all hearing formalities completed.

These plans with their dossiers were then presented to the Departmental Town Planning Commission, of which there was one in each of the ten liberated departments. Up to the end of the year there had been about fifty meetings of these various commissions, at which about thirty plans had been studied. There were four departments in which the commissions had not met at all.

Up to the end of the year only four plans had been definitely approved by the departmental commissions, and thirteen more had been approved tentatively. Only three plans had actually been put into effect by the municipalities. These were for Mauraup and Heiltz-le-Maurupt in the Marne, and a small village in the Nord.

The plans of all towns of over ten thousand inhabitants must be sent to the superior Town Planning Commission attached to the Ministry of the Interior at Paris. Up to February, 1920, no plan had been submitted to the Superior Commission. Meanwhile, however, the Superior Commission has had several meetings, and has issued instructions to the departmental commissions tending to improve and standardize town planning practice.

The town plans that have already been made are in about half the cases the work of architects and in the other half the work of local surveyors. In several departments,

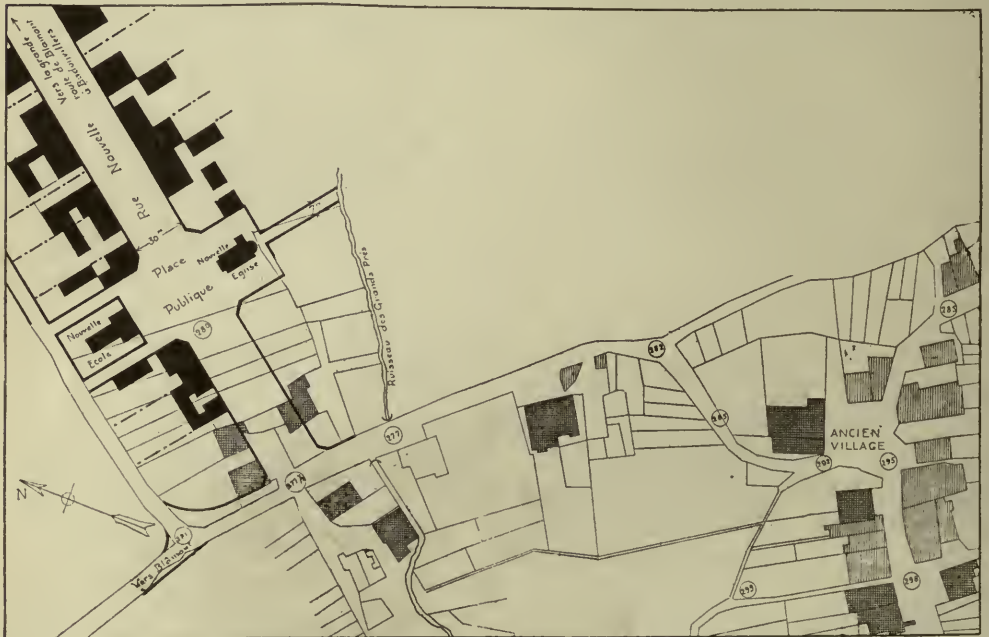
especially Pas-de-Calais, the government engineers of roads and highways have systematically made plans for new street alignments. In about half of the departments the government architect-in-chief, or his assistant, has made some sixty town plans.

Until recently the practice differed widely in the various departments as to whom the Préfet would delegate the criticism of the plans received by him, but now in almost every department both the architect-in-chief and the engineer-in-chief present their criticisms to the Departmental Town Planning Commission.

Unfortunately there was very little progress during the month of January, 1920. The towns and villages have a constantly increasing difficulty in finding competent people to make their plans. This is due to the fact that very few architects or engineers understand town planning in the sense that it is understood in England and America, and also to the fact that the town plans are not as attractively paid for as most of the other work that the French architects or engineers can do. The Minister of Liberated Regions, M. Ogier, is

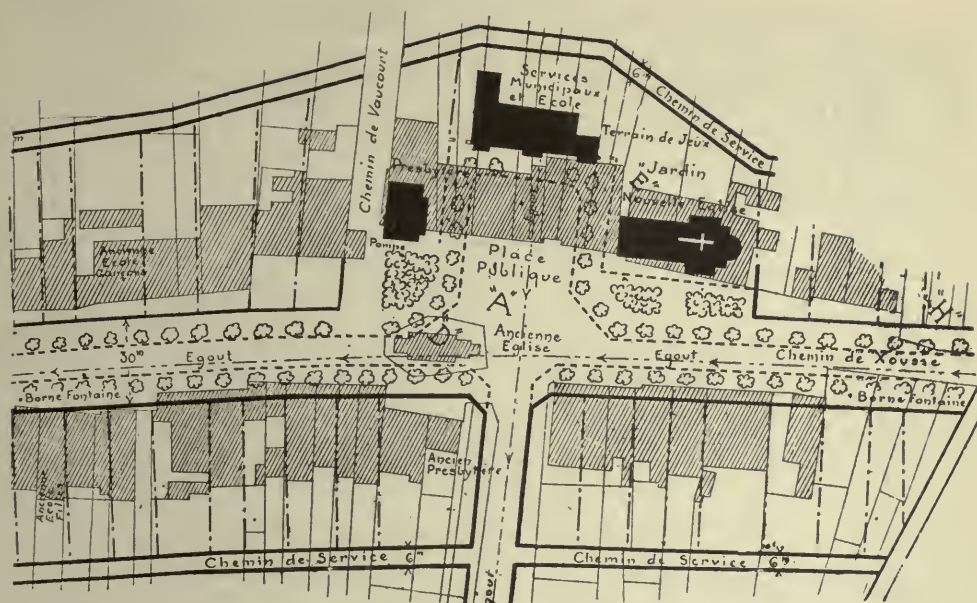
seriously studying the problem now, because he realizes strongly—as do many who are interested in town planning—that unless a solution is found soon the pressure to rebuild will become so strong that the town plans will have to give way and the great advantages of the law will be lost by default. Unfortunately, also, for the devastated regions, the big competition for a new town plan for Paris, which terminated on February 1, 1920, has for months absorbed the best energy of some two hundred of the best town planners of France.

Among the four hundred plans for the towns and villages which have already been submitted to the Préfectures, there are a few that are excellent, notably the plan for Armentières by M. Bourdiex, the plan for Béthune by M. Mulard and his associates of the Groupe Cordonnier, the plan for Bapaume by La Cité Nouvelle, the plan for Noyon by M. Mars, the plans for the villages of Sissy, Regny, Mezières, and Châtillon, in the Marne, by M. le Guen, the plans for Anizy-le-Château, and Pinon, by M. Abella, the plans for Dormans by M. Fournier, the plans for Bar-le-Duc, Va-



THE VILLAGE OF HALLOVILLE, REMOVED TO A NEW SITE

New buildings are indicated by solid black; those that are still usable, by the heavy shading; the lighter shading indicates buildings totally destroyed



MAIN PORTION OF NEW PLAN FOR THE VILLAGE OF EMBERMENIL

With the consent of the property owners, the narrow, unsanitary lots, where the houses were often five rooms deep, with three interior dark rooms, are all being widened out and the whole town reparcelled

rennes and Montfaucon by M. Remaury, the plans for a group of villages around Lunéville by M. Deville, and the plans for Rheims by La Renaissance des Cités.

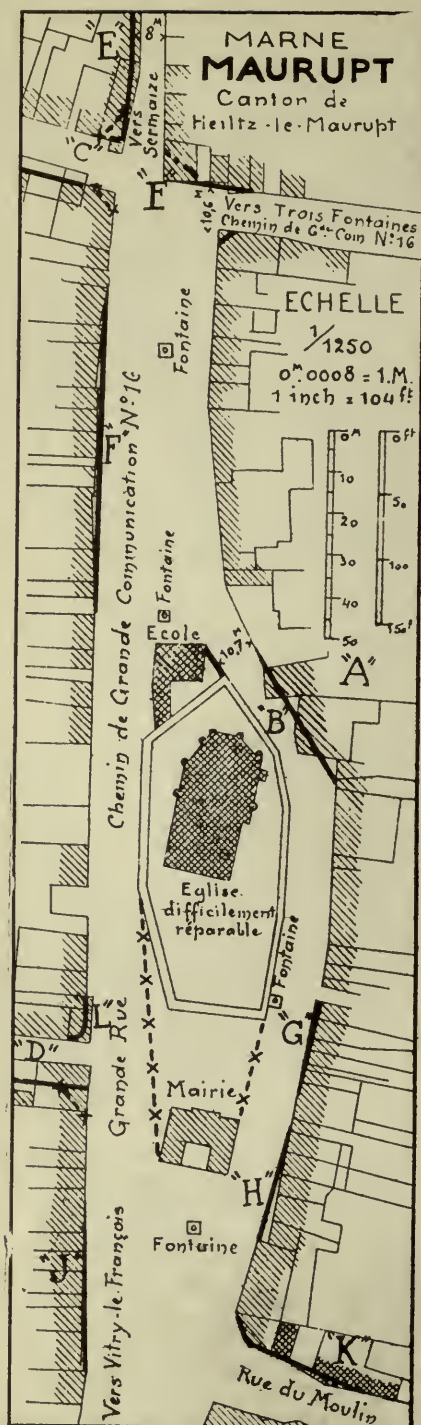
These plans have all been studied intelligently and conscientiously; the architect in each case has tried to improve circulation, hygiene, social amenity, and the appearance of the town—all with the maximum of economy and labor. Most of the other plans have fallen far short of what is recognized as good practice in England and America. Either the author has tried to make an elaborate academic plan, usually quite amateurish, or he has contented himself with straightening out all the kinks in the streets, thereby losing all the personality and the charm of the town. Both sorts of plans are wasteful, giving small value for money expended.

In various of the larger towns the town engineer or surveyor has made the plan. From the standpoint of common engineering practice, these plans are not bad, but they are quite lacking in breadth of view, in preparation for the economic and social growth of the community, and in amenity in general. This applies particularly to the plans for Arras, Rheims, Liévin and Verdun, and even to the plans made so far for

Nancy and Lille, altho Lille has recently taken a fresh start and is preparing for a competition shortly. Lille has also worked out recently a most interesting scheme for the improvement of her railroad and terminal situation.

Aside from the big town planning competition in Paris, competitions have been or are about to be held for Chauny, Longwy, Soissons and Lille. The competition for Chauny, which was held by La Renaissance des Cités, resulted in the submission of twenty or more interesting projects, and the prize scheme of Monsieur Rey is now being put into execution.

There are at least ten villages that have voted definitely to rebuild on an entirely new site, either because the former site was taken by the Government as a historical monument, as at Montfaucon; or because the town was too far from the railroad, as at Pinon in the Aisne; or because the former site was too marshy, as at Boureilles in the Meuse; or because the town was too inaccessible from the railway, as at Halloville and at Flirey in the Meurthe-et-Moselle; or because it is physically impossible to rebuild on the old site, as at Vauquois in the Meuse, where the whole top of the hill on which the town formerly



A TYPICAL CASE OF STREET ALIGNMENT IMPROVEMENT

The providing of a Place Publique and a school playground is one of the most pressing problems in the work of reconstruction. This has been thru all the stages of approval and is now law, and permanent reconstruction can be started anywhere

stood has been shot into the air so that not a vestige of the town can be found to-day.

One of the displaced towns, Pinon, has recently been adopted by La Renaissance des Cités with a view to creating on the new site a model town which will serve as an example to the whole devastated region of how a community can profit by its destruction to the great advantage of future generations.

We have heard a great deal in the newspapers about the "adoption" of towns in the devastated regions, but so far, with very few exceptions, the money which has been given has been used only for immediate relief. The only village that has been completely rebuilt is Vitrimont in the Muerthe-et-Moselle, near Lunéville, which has been reconstructed as a model village by Mrs. Crocker and Miss Polk of California. The plan, which was made by M. Charbonnier, the Architect-in-chief of the Department of Muerthe-et-Moselle, has resulted in many improvements in sanitation and comfort, especially in the removal of the manure piles from the fronts of the houses, and in replacing them by rows of trees. In the town of Hatton-Châtel in the Meuse, Miss Skinner of Holyoke, Mass., has put in a water-supply and many other improvements. The Daughters of the American Revolution are planning similar improvements in Tilloloy in the Somme, the town of Holyoke, Mass., at Aprémont in the Meuse, and the American Committee for Devastated France at Anizy-le-Château. Such adoption presents many possibilities of usefulness, for it can pay the supplementary cost over and above the war damages received from the state, needed to make local improvements.

The new Minister of the Liberated Regions, Monsieur Ogier, has been for many months the Préfet de la Meuse, and has thus had a first-hand acquaintance with the problems of the devastated regions. He is quite sympathetic with the aims and ideals of the town planners, and there is every reason to hope that town planning in the devastated regions will receive a new impetus. His assistant in charge of town planning and permanent reconstruction is M. Chiffot, the well-known French architect and Grand Prix de Rome. With his collaborators, the architects-in-chief in each of the ten liberated departments, he is now reorganizing the architectural and town planning service of the Ministry.

A number of the members of the French town planning society have taken an active part in making town plans for the devastated regions. A group of nine of them, under the name of the Bureau Technique des Plans de Villes, have made many projects. The Musée Social has been most helpful with its conferences and publications on town planning and allied subjects. At the Ecole des Beaux-Arts, Monsieur Jaussely has been giving a series of lectures on town planning. The Ecole Supérieure d'Art Publique has been giving courses of lectures on town planning. The Garden City Association has conducted a most useful propaganda for improved housing and town planning.

The Office Publiques des Habitations Bon Marchés, under the leadership of M. Sellier, is creating five garden suburbs around Paris, and is at present holding a big exhibition of town planning and housing. The city of Lyons is preparing a similar exhibition.

La Renaissance des Cités, which has brought together a number of the leading specialists and authorities on town improvement, has for three years been conducting an educational campaign in the devastated regions and giving free advice of the best sort to government and town officials and others to help them improve their town plans, hygiene, social welfare and their legal or administrative operation.

I began work with La Renaissance des Cités in October, 1919. Before that time the organization had helped on the plans for Chauny, Albert and Tracy-le-Val. Since October I have spent all of my time traveling up and down the devastated regions, working unofficially but directly with the departmental and local authorities, trying to help them improve the plans that have been submitted to them. Whenever possible I have submitted these plans to the Technical Commission of La Renaissance des Cités for their criticism. Meanwhile, wherever I have found a plan that was typical of what to do, or what not to do, I have copied it, with comments and criticisms attached, and La Renaissance des Cités has made prints which have been sent out to the Government and local authorities to serve as object lessons for

town planning improvement. Ten such studies have already been sent out, and twenty more are in preparation.

I have also prepared for La Renaissance des Cités a short handbook of the fundamental principles of town planning, based on the problems that I found to be recurrent in the plans already submitted at the préfectures. This is now being printed, and will be widely distributed. Several of the préfets of the liberated departments have asked us to take part in the deliberations of the departmental town planning commissions as technical advisers. Many local authorities have come to us for technical advice.

The Town Council of Rheims, at the suggestion of the Reconstruction Coöperative Society of Rheims, has asked us to take in hand the plan for Rheims, which was refused and sent back by the Departmental Commission on November 12, 1919. At the unanimous request of the Town Council we are now making a general plan in which we are trying to coördinate all that is best in the plans heretofore submitted. Our preliminary scheme has already been unanimously adopted by the Town Council, and the public hearings began on February 23.

Meanwhile, La Renaissance des Cités is an advisory and not a creative body, and does not wish in any way to replace the professional town planners. We have created a Commission of Experts for Rheims, consisting of M. Portevin, M. Rédont, M. Sue and M. Abella. Together, we hope before the middle of April to have completed a model plan which will serve as an object lesson for the whole devastated region. Plans are already under way for a number of cities in the interior of France, such as Nice, Lyons, Clermont-Ferrand, Aix-les-Bains, and many others.

In general, the future is very bright, but it is necessarily taking a long time to get started, because while France has a wonderful background on the esthetic side of town planning, she has had comparatively little experience with the social or economic phases—at least as they are understood in England and America. Any documents that England or America can send her on these lines are eagerly devoured.

The Urgent Need for a Federal Bureau of Housing and Living Conditions in the Department of Labor

By George Holden Tinkham

U. S. Congressman from Massachusetts

EDITORIAL NOTE.—Congressman Tinkham's bill is now pending before the Committee on Public Buildings and Grounds. The creation of a Federal Bureau of Housing and Living Conditions would make available to municipalities the valuable data on housing gathered by the U. S. Housing Corporation and Shipping Board during the war. It would also serve as a clearing-house for information on after-war housing developments, and, by aiding in the solution of America's nation-wide housing problem, would render great service both to employers and employees.

THE relation between labor and housing is vital. Good living conditions, and good housing conditions especially, promote better citizenship, increase productive capacity, and reduce labor turnover. The desire for a home is one of the deepest of human instincts. The National Government should interest itself particularly at this time in this great social and industrial problem.

The proposed Bureau on Housing and Living Conditions in the Department of Labor will be charged with investigating the housing and living conditions of the industrial population of the United States. The bill provides for research and experimentation by the Bureau with a view to the provision and publication of information to make economically practicable the elimination of slums, the improvement of living conditions, the reduction of the cost of construction of dwellings, and the financing of extended home-building operations with federal appropriations. It will assist communities by making available all existing housing facilities, and will serve as a clearing-house of information on housing and living conditions.

The Federal Government as a result of its war housing program, in which was expended approximately \$110,000,000 to build homes for industrial workers, has accumulated a vast fund of information and experience in this connection which should be made available to every community in the United States. This work of the Federal Government included the planning of entire towns; provision of municipal utilities on wholesale scale; the design of large

groups of houses in such form as to permit standardization of construction without monotony of exterior style; provision of open space in the form of gardens, parks and playgrounds; street improvements for whole sections, instead of spasmodic, unrelated development; equipment of houses with modern conveniences of standard type with the advantages of large-scale production; provision of transportation, schools, stores and other institutions necessary to community life.

Notwithstanding the high cost of this work due to the war, and the modification of plans because of shortage of certain materials, the bulk of this experience is of a character to be of direct, practical benefit to individual workers building their own homes, to employers desiring to provide homes for their employes, to operative builders constructing low-priced dwellings for the market, and to communities seeking to provide adequate living conditions for their citizens.

At the present time no government bureau has power to make this material available. This bill, if enacted into law, would permit the cities to make practical use of information gathered by the Federal Government at a tremendous price in war times. The problem affects the cities of the nation vitally because of the rapid expansion of the urban population in the whole United States, which is increasing at a rate three times greater than that of the rural population; 46 per cent of the whole population was urban in 1910, and there is little doubt that the 1920 census will show more than 50 per cent of our population living in

cities. Even before the war, on account of this rapid expansion, there was a shortage of homes, which was greatly augmented by the sudden cessation of building during the war.

The normal peace-time expenditure in the United States for workmen's houses has been estimated at \$1,000,000,000 a year. In 1917 the expenditures for this purpose were only 10 per cent of this amount. This deficit is being further rapidly increased at present by the very high cost of labor and material, as well as the difficulty of obtaining mortgage loans. It was estimated some time ago that there was a shortage of more than one million homes in the United States. Every community is seeking the best possible means of relieving a situation more acute to-day than ever. The National Government has distributed land to homesteaders in the rural districts, and has established Federal Land Banks for the financing of the farmer. Many departments of the Government have bureaus which study and publish information regarding a multiplicity of subjects much less important than the subject of housing and living conditions.

Even before the war Great Britain, France, Germany, Austria, Belgium, Denmark, Hungary, Italy, Norway, Sweden, Luxemburg, Roumania, Spain, Switzerland, Canada, Australia, New Zealand, Cuba and Chile had provided either thru loans from public funds, thru subsidy, or thru some other form of governmental aid, for the decent housing necessary to maintain the health and vigor of their people.

Great Britain now has before Parliament a bill extending the Housing Acts of 1890 and 1909 by making it mandatory for local government authorities to provide housing for industrial workers. In case the local

authorities fail to act, the Local Government Board may step in, take the necessary action, and charge the cost to the local community. There seems to be no doubt that this bill will pass substantially in the form in which it was introduced. Since the armistice Canada has provided a fund of \$25,000,000 to be loaned thru the provincial governments to local governments, building societies and individuals, to build houses. Australia has provided a fund of \$100,000,000 for repatriating sold'ers. Its provisions cover towns and cities, as well as rural districts.

The building of houses by the Federal Government, or federal subsidization of private construction, can be most effectively avoided only by systematic cultivation of measures to assist state and local governments, civic agencies, industrial, commercial, and investment corporations, and individual citizens, with advice and accurate information based on the experience of other communities and the research and experimentation conducted by experts in the employ of the Federal Government.

Evidence of the desire for assistance in housing on the part of chambers of commerce, legislatures, state and municipal authorities, operative builders, house-building corporations, real estate boards, women's clubs, labor unions, is abundantly available in the daily correspondence of the U. S. Housing Corporation.

The United States is thus far practically the only country engaged in the war which has not taken definite steps to relieve the vital housing situation and to study living conditions in urban communities. There is no reason why there should be further delay, and every reason why, in the interest of our cities, this bill should be acted upon at the earliest possible moment.

What City Planning Is

The modern science of city planning is to provide a certain system of wide streets for accommodation of vehicular travel; to provide opportunity for the accommodation and expansion of railroads and terminals where are handled the raw materials and products of the city's industries; to simplify and expand the transient system; to provide various types of parks and playgrounds in accordance with needs; to divide the city into various districts for reg-

ulating the height, area and use of buildings so that the public health, safety, general welfare and public convenience may be promoted and improve the city's appearance. In short, it is the purpose of city planning to control the city's growth in the interest of public economy, efficiency, convenience and harmony, so that there will result a more complete and more satisfactory structure for purposes of business and of residence.—*From Report of City Planning Commission, Omaha, 1919.*

The Practical Design and Management of Swimming Pools

By William P. Mason

Professor of Chemistry, Rensselaer Polytechnic Institute, Troy, N. Y.

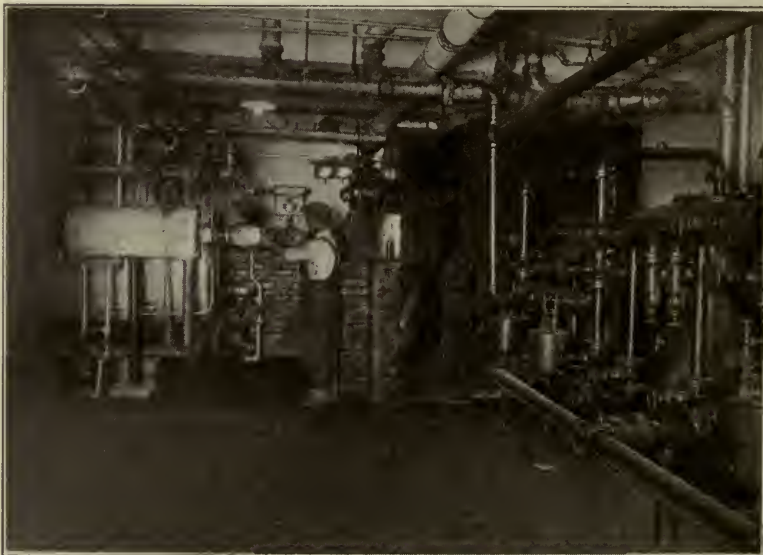
A SWIMMING pool should, first of all, be constructed in a satisfactory manner from an engineering standpoint. It is especially desirable that the means of getting the water out of the pool should be carefully planned. It is a very serious error to place the outlet in the side of the pool. If any deposited matter is to be gotten rid of, it is practically impossible to draw such sediment thru a side orifice without nearly emptying the pool. If the orifice is in the floor, the material can be pushed on top of the outlet grating and a very few turns of the valve handle in the pipe leading to the sewer will dispose of the sediment without difficulty and with small loss of water. With a pool the size of ours at Troy, containing 100,000 gallons, unnecessary loss of water quickly runs into money and attracts the attention of people who have to pay for it.

Side Gutters

The side gutters are sometimes poorly designed. If they extend too far from the

wall it is a very serious inconvenience; on the other hand, if they are covered by the overhang the swimmer cannot easily spit into them unless he is a dead shot, and in his efforts to do so he often misses entirely and the sputum gets into the pool, where it proves a most disgusting thing for a bather to swim up against.

"Fill and draw" pools are usually filled and emptied about once a week. This type is getting somewhat scarce, and water must be pretty cheap in order to allow of such a form of operation. More commonly the water is continually circulated, as at the Rensselaer Polytechnic, is subjected to some system of improvement, and is replaced after long-stated intervals. At Rensselaer we retain the same water for a year, making the change in August. That time is selected because the students are then away and we can run out the old water, look things over and refill with less inconvenience. Thruout the year the same water is continually circulated by the pumps thru the filters, of which we have four, each 4 feet in diam-



Illustrations courtesy of Rensselaer P. I. Bulletin.

THE WATER HEATERS AND FITTERS OF THE RENSSELAER POLYTECHNIC
INSTITUTE SWIMMING POOL, TROY, N. Y.

eter. Our rule is to chlorinate once a week with chloride of lime. Where the same water passes constantly thru filters using alum, it is necessary to keep watch of the alkalinity and restore it at times with soda ash.

Rules for Swimmers

What is to be done in the way of protecting the pool by rules? It is easier to make than to enforce them, and at times some failures will occur, but on the whole they are not troublesome. So far as disease-transmission is concerned, people who are suffering from anything very serious are not likely to ask admission to the pool, and if they do ask permission it is the watcher's business to keep them out. I believe that there is less trouble in the matter of damaging the pool from specific diseases than people imagine, largely because those who are suffering from such diseases do not care about entering the bath, and certainly do not care to be caught doing so. We do not ask that a man with a slight cold shall refrain from bathing. In some places that is required, but it is carrying the protection of the water pretty far. I have no doubt a man with a mild cold can easily get by without being detected and get to the pool if he wants to go.

The Best Temperature for the Water

At what temperature is it best to keep the water? At Rensselaer we keep the pool at 76 degrees, except on the occasion of a swimming match of some kind, and then we run it down to 72 merely to put a little "pep" into the men who are performing. Under ordinary conditions, if one is going in simply for the pleasure of having a dip, or to learn how to swim, anything short of 74 or 76 makes it a rather strenuous undertaking. In the summer-time a swim in the open is quite different, and one can stand cold water then very well, but in a pool under cover in the winter-time, unless the water is up in the seventies a bath



THE RENSSELAER SWIMMING POOL EMPTY

feels uncomfortably chilly. Of course a Turkish bath is a different proposition—a cool pool is needed under those circumstances in order to start a reaction from the very high temperature to which the bather has been exposed.

The Removal of Color and Turbidity

High color or turbidity is unsightly and masks such undesirable floating material as sputum, but beyond that either may be absolutely dangerous. I have in mind what happened at one of our large institutions not many years ago. The pool was very turbid and on draining it a man who had been missing for some days was found at the bottom. Unless the bottom of a pool can be seen it is better not to use it. A prominent girls' school has recently closed its pool on account of the turbid character of the water. While it was still in use, whenever a group of girls went in, the teacher had to keep watch all the time to see if somebody was missing. A turbid pool is very dangerous and should not be tolerated. A color or turbidity small enough to be possibly unobjectionable in a drinking glass might be sufficient to prevent the bottom of a pool from being seen thru a depth of eight or nine feet. Partly in this connection it may be permitted to add that at one of our universities a fatality was occasioned by a student's diving into an empty pool at night. Such an accident can, of

course, be guarded against by suitable rules controlling admission.

To remove the sediment which collects at the bottom of the pool we use a sweep at Rensselaer and push everything that settles on to the top of the outlet grating, whence it is flushed to the sewer by suddenly opening the valve. As I have already said, the grating must be on the bottom rather than on the side to allow of doing this.

In pools used by women, bathing suits are worn, usually colored ones, and a vast amount of fiber comes off, and it is most unsightly. Not very long since, in Boston, I saw a device designed to remove such material. It is best described as a modified carpet-sweeper of the suction type, entirely similar to what is ordinarily used for cleaning floor rugs. The hollow handle is about $1\frac{1}{4}$ inches in diameter, and it is attached to a suction motor by a hose. There is a brush at the bottom end about 18 inches long and 6 or 8 inches wide, filled with stiff bristles set along a slot. Upon applying suction the material goes out thru the handle and is discharged into the side gutter.

Purifying the Water

Altho chlorination and filtration are the usual means employed for keeping the pool water in proper condition, there are two other ways of securing water improvement—ultra-violet light and ozone—which have been somewhat recently introduced. The University of Illinois formerly used chlorination, but is now using ultra-violet light and speaks well of it. It is certainly very attractive in appearance. The New York Athletic Club at 59th Street and Sixth Avenue, New York City, uses it successfully. The Board of Health of New York City has pretty thoroly threshed out the question of ozone and has reported favorably on it. The amount of money which is quoted in the Board of Health report is small enough, but the up-keep of an ozone plant is usually considerable.

At Rensselaer we attempt to keep our alum doses about one grain per gallon, but, of course, we do not hope to strike that amount accurately, as we employ self-feeders. It is not as tho we had a large plant where we could run in a well-controlled alum solution. We use a very homely, but we think an efficient, method of chlorine application; ordinary bleaching powder is

mixed up with water into a cream and distributed directly by hand at the shallow end of the pool. In dose we use "bleach" enough to correspond to 0.6 parts per million of chlorine, which is the amount legally adopted in California. At Yale they use 0.3; Northwestern, 0.6, the same as we do; and in some other instances the dose is as high as 1 part per million.

There is an immense amount of objection on the part of some bathers to the dosing of a pool. We have had complaint time after time, and it is usually based upon imagination. A bather cannot detect the presence of 0.6 parts of chlorine per million. In practical tests we found that there was a suggestion of smell at 1.5 parts chlorine per million, but no taste and no action on the eyes whatever. At 2.5 parts per million of chlorine there was a faint smell, but there was no taste, nor was there any action on the eyes. When we ran up to 50 parts per million, of course we got a strong taste, and we also got a strong smell, but did not notice any action on the eyes. The bathers have complained of dosing when no dose had been used. I remember that years ago when we were about to turn on the alum at the new filter plant at Elmira, the people tasted the alum four days before we put it in.

With reference to establishing a legal standard for the water of swimming pools, I know of only two states that have made the attempt—California and Florida. California has a pretty liberal standard and attempts to keep the total count of bacteria below 1,000. At Rensselaer we do better than that, for we have been running on an average of about 250.

We rarely get coli, as our 0.6 parts per million of chlorine every week seems to control their growth. California allows one bacillus coli communis per cubic centimeter.

The preliminary showers should not be too cold, and the soap used should be liquid. Many people dread a cold shower altho they do not object to a cool plunge, consequently unless arrangements are made to take the chill off the shower water the actual washing accomplished by it will be rather sketchy.

Care of Outdoor Pools

Pools that are built in the open without protection from direct sunlight will prob-



THE CROWD ATTENDING A MEET AT THE RENSSELAER POOL

ably be troubled with growths of algae, especially if they are filled with ground water. Copper sulphate is the natural remedy in such a case, and the minute amount required is best determined by trial. Considerable stress is sometimes laid upon the advantages of direct sunlight in those unusual cases of such indoor pools as possess it, but the gain is offset, at least in part, by liability to algal growths. In such instances copper sulphate is again useful, but the need for complicated apparatus to administer the dose is unnecessary. Plants supplied with such dosing outfits seldom or never employ them.

It is unfortunate that some cities, even large ones, are not sufficiently careful to select suitable sites for their outdoor public baths. When a city goes so far as to fence off and equip some portion of a river or bay, setting it aside as a public bathing

place, the bathers have a right to assume that the site has been selected with care and that the water is hygienically safe, but sometimes the assumption is distinctly risky. In one instance a great metropolitan sewer emptied on the up-stream side of a public bath (now closed) and so near that when the sewage was colored by a red dye the bathers were startled by the blood-like tint of the bath water.

It is vain to hope that high bacterial counts and the presence of "gas formers" can always be avoided. The human animal is not quite clean enough to insure that, but nevertheless it is entirely feasible to run a public swimming pool so as to keep its appearance attractive and its use within what may be termed "proper and reasonable risk."

ACKNOWLEDGMENT.—From a paper read before the New England Water Works Association convention, Albany, N. Y.

Has Your Community a Safe Water Supply?

How do you know that your water-supply is safe? Have you *recently* made a sanitary survey of the sources of the supply to make sure that it is not potentially dangerous? Do you have bacteriological tests made frequently and regularly? Do you permit a large proportion of your citizens to use water from wells which may be polluted? Is your town adequately sewered, or are there still many homes with cesspools and insanitary privies? If your town is small and not provided with water-works, it is possible that insanitary privies and unsafe methods of disposal of human excreta are polluting your wells.



Pittsburgh's City-County Building

THE City-County Building in Pittsburgh represents an expenditure of \$5,586,292, of which \$2,486,292 was paid for the site. The design was selected thru architectural competition under the rules of the American Institute of Architects, and is the work of Edward B. Lee of Pittsburgh, associated with Palmer and Hornbostel of New York. The building is of granite on steel frames, and contains nine stories and three mezzanine stories. It is 306 by 184 feet, and is built around a court

144 by 84 feet. The joint committee representing the city and the county in the construction of the building was composed of members of the City Council, the Director of the Department of Public Works, the County Commissioners, and County Engineer J. G. Chalfant. In the details of the work the Department of Public Works was actively represented by Stanley L. Roush, architect of the Bureau of Engineers, who was assisted by Chief Engineer N. S. Sprague.

The Benefits of Municipally Owned Water-Works in Seattle

By L. B. Youngs

Superintendent, Water Department, Seattle, Wash.

DURING its career of twenty-nine years the Seattle municipal water system has illustrated the historic saying that the happiest country is the one that has the least history. The water system has had no "ups and downs"; its course has been one of steady progress, without crisis or sensation. It has always paid its way, and there has never been a question as to the stability of its business or its credit. In fact, it is a municipal institution which business men would designate as "solid."

Sometimes the rapid growth of the city has pressed hard on the necessary new construction, causing a scarcity of water in the higher districts of the city for a short time in summer, when largely increased quantities are needed for lawns and gardens; and upon one occasion an accident to one of the bridges carrying the pipe lines caused a shortage for a period of six days; but, taken as a whole, the supply has been adequate, constant and cheap. The quality of the water is unquestioned, as its main source is melting snow and ice in the mountains, and the watershed is protected from contamination by the most stringent laws and rules of the state and city health departments. The Health Commissioner reports that not a single case of typhoid has yet been traced to the use of Cedar River water.

The embryo plant was purchased from the Spring Hill Water Company in the year 1890 for \$350,000. Since then additions have been made to the equipment, until in July, 1919, the investment, in round figures, was nearly \$15,000,000, a sum equal to that paid for the street railway system. About one-third of this has been, or will be,



SPILLWAY AT INTAKE OF WATER-SUPPLY FOR SEATTLE, WASH.

paid by assessments against property directly benefited by local water-mains. Of this total cost, \$2,500,000 has been written off for depreciation, leaving a net value of \$12,500,000.

The revenues of the plant in the year 1918 were \$1,179,794.24; the disbursements were as follows:

Operating and maintenance	\$266,937.95
Bonds and warrants redeemed	280,586.40
New construction	277,206.89
Interest charges on debt	206,523.85
Reconstruction	4,643.42
Real estate	3,707.54
	<hr/>
	\$1,039,606.05
Leaving a revenue surplus of.....	140,188.19
	<hr/>
	\$1,179,794.24

Up to January 1, 1919, there had been issued:

General lien bonds.....	\$3,261,980.00
Redeemed	\$ 449,671.19
Utility bonds	3,575,000.00
	<hr/>
	\$6,836,980.00
Redeemed	2,260,000.00
	<hr/>
	2,709,671.19

Balance funded debt outstanding....\$4,127,308.81

The department is now redeeming each year from its earnings over 6 per cent of this funded debt.

The quantity of water furnished thru meters during the year was 1,342,904,666 cubic feet, which is equivalent to a consumption of 79 gallons per capita per day for a population of 350,000 people, the

probable number who took water thru meters.

The capacity of reservoirs and stand-pipes is 271,137,000 gallons. The daily consumption and other data for 1918 are given below:

	Gallons
Metered water	27,593,932
Unmetered water (est.).....	5,000,000
Total	32,593,932
Miles of supply mains, Jan. 1, 1919.....	62.64
Miles of distributing mains	642.80
Total	705.44
Number of fire hydrants	6,188
Number of gate valves	5,875
Number of meters	47,283
Number of fixed rate services	726
Total services in use	48,009

The capacity of pipe lines per 24 hours:	Gallons
No. 1	22,500,000
No. 2	44,769,000
	67,269,000

Area of watershed.....	142.71 square miles
Area of Cedar Lake:	Aces
at original elevation of 1,530 feet.....	1,222
at flow line of timber dam—elevation 1,546 feet	1,586
at flow line of masonry dam weir—1,555 feet.	1,834
at flow line of masonry dam—permanent elevation 1,590 feet	2,847

The annual rainfall in watershed is from 7 to 11 feet.

Impoundage capacity:	Cubic Feet
Timber dam	720,000,000
At elevation 1,555 feet	2,357,000,000
Permanent dam	5,720,000,000

There are three distributing zones in the city, as follows:

- The low-service district: all the areas less than 225 feet above tidewater
- Intermediate service district: all areas between 225 and 325 feet above tidewater
- High-service district: all areas more than 325 feet above tidewater

The two former are supplied by gravity; the low-service from reservoirs having an elevation of 318 feet; the intermediate from reservoirs having an elevation of 420 feet; the high-service from stand-pipes supplied by pumps, the stand-pipes having an elevation of 520 feet above tidewater. •

Rate Reductions

Since the city took over the plant in 1890 there have been nine reductions in the rates. They are now about one-fifth of what they were at that time. At the rate of 6 cents per hundred cubic feet, at which water is furnished to the people of this city, the cost amounts to just one-fourth of a cent per barrel, or 2 cents per ton. Is there any other commodity that can be bought,

delivered at your house, for a price approximating these figures?

One of the most gratifying observations with respect to the growing efficiency of the plant is the ratio of the pay-roll to the revenues of the plant. These ratios for nine years have been as follows:

	Per Cent
1910.....	25.6
1911.....	21.9
1912.....	21.4
1913.....	20.9
1914.....	19.8
1915.....	19.8
1916.....	22.7
1917.....	17.9
1918.....	18.6

The career of the Seattle Water Department clearly shows that a public service utility can furnish a cheap and adequate service and conduct its financial affairs in a safe and conservative manner. The perfectly regular demand for certain public services, as, for instance, water, light, gas and transportation, furnishes a fairly accurate basis upon which to compute necessary income. When the increase in population is reasonably regular, the annual amount necessary to supply public service can be fairly well determined in advance. It is true that certain parts of the equipment can be installed to advantage only by anticipating the requirements of a community for some years ahead, and, as a consequence, it may be sound policy to carry overhead charges for some time on equipment that is not all needed. It should not be difficult in such cases to distribute these costs so that the income of the plant would meet them from year to year. Unfortunately, such additions are too frequently put off until the condition approaches a crisis, and then they are installed all at once, without any provision's having been made for increased revenue to meet the sudden expansion in costs which such large additions make necessary.

The success of a public service utility finally resolves itself into a matter of intelligent management, for, unlike many lines of private business, its patronage is permanently assured. If, in some cases, or in many, the public does not know how to conduct business, it must, like a private individual, or a corporation, learn how. The many successful public service utilities now owned and operated by communities thruout the country indicate clearly that the people of the United States are learning how.

Bridge Construction at Walla Walla, Washington

Peculiar Stream-Flow Conditions Determine Types

By W. R. Rehorn

City Engineer, Walla Walla, Wash.

WHILE the city of Walla Walla has quite a number of bridges to maintain, most of these are of short spans, ranging from 25 to 50 feet in length and from 20 to 80 feet in width. Up to five years ago most of the bridges were of timber construction, using 4 x 4-inch or 4 x 16-inch lumber for floor beams, and 4 x 12-inch material for decking. Where the span is greater than 24 feet a center pier is used. A large percentage of the bulkheads and center piers were of pile construction which had been in use for from twelve to twenty years, and they were beginning to show actual decay. It was also observed that the usual life of wooden decking was only from one to four years.

After going over the bridge situation thoroly, it was decided that by taking the weaker structures first and gradually replacing them, using the best of the material remaining to repair other bridges, and by building two or three new bridges a year, the replacement could be accomplished without placing undue burden on the taxpayers. This policy has been pretty well lived up to, so that at present there are only about five more bridges to build, three of which will probably be built in 1920.

The most serious difficulty encountered in designing bridges in Walla Walla is caused by the small clearance under the bridges. During the greater part of the year, the creeks flow only a few cubic feet of water, but after the melting of a heavy snow in the mountains, especially if the



HOWARD STREET BRIDGE, WALLA WALLA, WASH., SHOWING POOR CONDITION OF WOODEN FLOOR BEAMS AND LOW HEAD ROOM

snow is taken off by a warm rain, these creeks come up very rapidly and flood the creek channel so that all of the clearance obtainable is needed. There is usually only a difference in elevation of 3 to 6 feet between the street level and the creek bed, and when large quantities of sand and gravel are brought down by the creek, as the water subsides nearly as rapidly as it rises, the gravel is deposited along the channels and rapidly raises the elevation of the creek bed.

In order to conserve all of the clearance possible, the plan of constructing a center pier under all bridges, regardless of span, has been adopted. In this manner the bridge becomes a twin culvert or double-span girder bridge. While this is not recognized as the best practice, because of the liability that trees, lumber or brush will lodge against the center pier and cause a jam, it has been found in Walla Walla that there is not much probability of this happening. In fact, there is more danger from a large stump or piece of timber being caught on one of the beams and wedged between the



A FLAT-SLAB CONCRETE BRIDGE AT CHASE AVENUE, WALLA WALLA, SHOWING CENTER PIER

girders and the creek bottom; this would cause a slowing down of the current, which would begin to deposit gravel, thus forming a bar around the obstruction nearly to the bottom of the girder.

During 1919 three wooden bridges were replaced with reinforced concrete structures. Two of these were 27-foot spans and one a 48-foot span. The first two were designed for a twin-slab bridge, 26 feet over all, having one center and two side piers all constructed of concrete.

The unusual feature about these bridges was the foundation. Ordinarily there was very little trouble in getting wood foundations for footings, because most of the material along the creek is solid gravel, under which, at a depth of 4 or 5 feet, is a dense cement gravel. The usual procedure is to excavate down to this cemented gravel, but in order to save expense, and as the floods have a tendency to raise the creek bed by a deposit of gravel, the foundation was carried down only 3 feet, and reinforced con-

crete beams 10 by 18 inches spaced every 20 feet parallel to the center of the street, were run and tied in to the center pier and the outside piers. Several bridges similar to this have been designed and have proved entirely satisfactory.

The Chase Avenue bridge, a structure 80 feet wide, consists of two 25-foot sidewalks and a 30-foot roadway. The roadway has been surfaced with a 2-inch Bitulithic pavement.

The Howard Street bridge is located at the intersection of two streets at right angles to each other, the north line of the bridge being very nearly on the diagonal of the street, which made the spacing and bending of the reinforcing rods rather complicated.

The Thirteenth Street bridge is 30 feet wide and 48 feet long, and is of the girder type. This bridge was built primarily for highway traffic, as there are few houses on the street and very little pedestrian traffic.

All bridges are designed for a live load of 150 pounds per square foot of bridge surface for the roadway, and for 100 pounds per square foot for the sidewalks, and all bridges have a 2-inch pavement on the roadway.

By using the center pier, from 1 to 2 feet more clearance is gained, and it is also found that the water has a tendency to flow thru only one side of the bridge at all times, except during floods, thus keeping the channel cleaned out better under the bridge.

The Peril of Grade Crossings

The following editorial recently appeared in the *Courier Journal* of Louisville, Ky., after a serious collision between a railroad train and a trolley car, which resulted in additional business for the hospitals and the undertakers:

Grade crossings are a continuing peril to human life, as well as a constant cause of delay in the city traffic. In many cities abandoned years ago, Louisville has waited already too long for their abandonment here. The

recent announcement by Mayor Smith of progress in negotiations with the railroad companies for the construction of viaducts and subways was encouraging. But what the people wish to see is the actual start upon the work. Last evening's accident, with its serious casualties, should be the final object lesson. The grade crossing must go! It will save the city of Louisville, the Louisville Railway Company and the railroads vexation and thousands of dollars in damages for personal injuries if they will adopt that slogan and make the task one of the first orders of business.

The Construction of the South Side Storm Sewer, Great Falls, Mont.

By M. L. Morris

Civil Engineer, Great Falls, Mont.

GREAT FALLS, a city of approximately 35,000 inhabitants, has, like many other cities, built its sewerage system piecemeal, as the immediate needs seemed to require. For the most part only sanitary sewers were built and no provision was made for storm water. This was not a matter of much annoyance until the roofed area in the business district became extensive enough to deliver a rain-water run-off to the sanitary sewers sufficient to gorge them and to flood a number of the basements in the down-town part of the city when there is a heavy rain. In addition, the constantly increasing area of street paving has made adequate provision for storm water an immediate necessity.

To meet these needs the storm sewer at present under construction was designed. Since this is the first storm sewer of any size in Montana, data upon which to base calculations were difficult to locate. The records used were those of a volunteer observer covering a period of twenty years. There were no observations of the intensity of rainfall except an occasional memoran-

dum. A formula, based on a study of the data, was derived, which gives the rainfall in inches per hour as equal to 45 divided by the time of the rainfall considered in minutes plus 15. This would be a very light precipitation to provide for in the central and eastern states, but it is believed to be enough for a semi-arid country such as this section of Montana, especially where there are no basement connections to the storm sewer and the sewer may be surcharged without fear of damage. The territory to be drained is practically all of the city lying east of the Missouri River, and the surrounding country, an area of about 2,000 acres. The out-fall section of the storm sewer is built of reinforced monolithic concrete and has two channels, each 6 feet wide by 5 feet high, with inverted arch inserts and flat slab top. This part of the sewer will be below the river level in times of extreme flood, and for this reason the sectional area was made to carry the storm flow from the sewer above it, when under a head of slightly over 2 feet; in other words, it must act as an inverted



DRAG LINE EXCAVATOR ON STORM SEWER JOB EMPTYING INTO HORSE-DRAWN DUMP CARS. TRENCH WITH PIPE IN PLACE SEEN IN FOREGROUND



DERRICK HOISTING SECTION OF 60-INCH PIPE PREPARATORY TO PLACING IT IN TRENCH

syphon, and the area was calculated on that basis.

With the exception of 400 feet of 24-inch vitrified pipe, the remainder of the sewer was constructed of reinforced pre-cast concrete pipe in 4-foot lengths, as manufactured by the Pacific Lock Joint Pipe Company. All pipe was manufactured to meet the requirements set forth in Bulletin No. 31 of the Iowa Experiment Station. A suitable quantity of the pipe was tested for crushing strength and found satisfactory. The test is made by bedding the pipe in sand thru 90 degrees at the bottom and applying the pressure from the top thru a sand bed covering the same angle. The pull on the end of the lever, which was used to apply the load, was measured by a dynamometer. Knowing the proportions into which the lever was divided, it was a simple matter to calculate the pressure exerted on the pipe. The yard where the pipe was made was quite extensive because of the fact that no pipe was moved to the ditch before it was thoroly seasoned for a period of twenty days or more.

The method of excavating the trench for the pipe is quite novel. This work was done with a drag line machine, and no material excavated was handled more than once. If it was to be wasted it was drawn to the dumping ground, and if to be used

for back fill it was unloaded in the trench behind the sewer barrel construction. All material was loaded into dump wagons or trucks as taken out by the drag while the sewer was being constructed across the railway yards of the Great Northern and the C. M. and St. P. After the railway tracks were crossed, the back filling was done by means of a section of railway track and a dump car, and the excess material was moved with a motor truck. The two illustrations given show the drag line excavator dumping into the cars and also the placing of one of the 4-foot sections of 60-inch pipe by the derrick.

Practically the whole of this work has been thru bad ground with numerous quicksand pockets. On account of the ease with which the earth could be handled, little effort has been made to brace the trench; it was cheaper and quicker to move the extra material than to undertake bracing. It has always been necessary to have pipe ready to drop into place as soon as the trench was brought to grade, so that no full depth was allowed to stand more than a few minutes before the pipe was set and backfilled to the spring line.

The contract for this work was let on a unit price basis, the principal items of which were as follows:

Earth excavation and backfill, per cubic yard...	\$ 1.62
Monolithic section not on piles, per linear foot.	36.45

66-inch pre-cast pipe in place, per linear foot...	12.97
60-inch pre-cast pipe in place, per linear foot...	11.77
54-inch pre-cast pipe in place, per linear foot...	9.56
42-inch pre-cast pipe in place, per linear foot...	6.66
36-inch pre-cast pipe in place, per linear foot...	5.11
30-inch pre-cast pipe in place, per linear foot...	5.64
24-inch pre-cast pipe in place, per linear foot...	3.25

Experience with the work so far (85 per cent complete) indicates that these figures are safe and leave the contractors a rea-

sonable margin of profit. The schedule of wages for common labor is \$5 per day for eight hours, carpenters \$7, engineers on drag line and mixer \$8, foreman \$10, team and driver \$10. The total cost of the work will probably be about \$225,000. Fred Saner, of Butte and Great Falls, Mont., has the contract for this construction.

Increasing Use of Motor Trucks in Garbage Disposal in San Antonio

Motor Truck Operation Shows Great Saving Over Use of Wagons

By Ray Lambert

Commissioner of Parks and Sanitation, San Antonio, Tex.

GARBAGE disposal methods in San Antonio have undergone considerable change in the last two or three years. Recently a DeCarle incinerator was purchased and placed in operation, and has proved very successful in the destruction of garbage and rubbish, which has no salable value. For some time an abandoned rock quarry was used as a dumping-ground for the garbage. This is still continued in use, but not nearly to the former extent.

Wet garbage has always been fed to hogs, under private contract between the hog dealers and hotels, restaurants and boarding-houses. The dealers call each day at these places and collect all garbage, the city having no contract whatsoever with these men.

San Antonio has gone thru the same experience as a great many other cities in the

last year-and-a-half since the Food Administration carried on a convincing advertising program for the conservation of food. The city collects all garbage from individual homes, but on account of the propaganda work of the Food Administration there has been very little wet garbage to collect, as the general public has been awakened to the practice of great economy. The only real waste which is now collected by the city consists of rags, cans, metal and bottles. The city is at present contemplating an arrangement whereby there will be a salvage on these commodities. When this is accomplished, which we feel confident will be soon, there will be practically no waste from these types of municipal refuse, and, in fact, there will undoubtedly be a profit.

The handling of all garbage collected by



MOTOR TRUCK AND TWO-WHEEL TRAILERS IN USE IN GARBAGE DEPARTMENT, SAN ANTONIO, TEX.

the city was formerly done by the use of wagons. After a thoro investigation, a system of hauling by motor truck and trailers was adopted, and this has proved most satisfactory. We are now operating 12 trucks and 24 trailers, 2 trailers to each truck. There is one driver for a truck, and two pick-up men. The pick-up men are constantly patrolling the district covered by the trucks. They do not go to the dump with the trucks, but are left in the city re-loading the trailer while the extra truck goes to the dump with the filled trailers.

Comparison of the cost of the old wagon system with that of the new system, including the use of trailers and trucks, shows a

saving of between \$25,000 and \$30,000 a year, or approximately 33⅓ per cent of the old cost of collection. Not only is this of material benefit to the city as regards expense, but the work is done more rapidly, and hence is a greater accommodation to the public.

When the trucks were installed in San Antonio, we had 48 wagons in service. The population was about 125,000 people. The rate of hire for each wagon was \$3 per day; hence, with an average of 26 working days per month, this entailed a total monthly expense of \$3,744. Under the present system, we are using 11 trucks and 22 trailers, and serving a population of 200,000.

Recent Methods of Snow Removal in New York

The oil-burning snow melter shown below, mounted on a 7½-ton Mack truck, has been in use in Brooklyn, N. Y. It is the invention of L. V. Stevens, a Canadian engineer, and was first successfully used by the Canadian Pacific Railroad to clear its tracks. The truck carries an 1,800-gallon tank of crude oil, and travels at the rate of 5 miles an hour, pouring

forth an incandescent flame some 10 feet ahead, and collapsing snow-banks as if by sunstroke.

A baby army tank with plow and scraper attached also did good service in the same city after the series of blizzards in February. On page 327 is an illustrated description of another piece of snow removal apparatus.



OIL-BURNING SNOW MELTER DEMONSTRATED IN BROOKLYN, N. Y., DURING THE RECENT DIFFICULTIES WITH SNOW REMOVAL

Wood Block Paving Between Street Railway Tracks

By Andrew F. Macallum

Commissioner of Works, Ottawa, Canada

WHEN creosoted wood blocks were first used for street paving, it was the accepted practice to bed the blocks in sand. Upon streets where trams operated it was found that movements in the rail joints had the effect of pumping the sand out, with the consequent settling of the blocks, giving an uneven surface. Water would get under the blocks, and during freezing weather there would be considerable heaving, so that in many cities the sand cushion was abandoned for a cushion composed of dampened cement and sand. This cushion, while slightly better, was not at all satisfactory, in many cases acting somewhat like the sand cushion, possibly because of insufficient cement, altho proportions were as rich as one of cement to one of sand. A wet mortar cushion of the same proportions was more satisfactory, but the monolithic effect was lost if traffic

was allowed upon it too soon after laying.

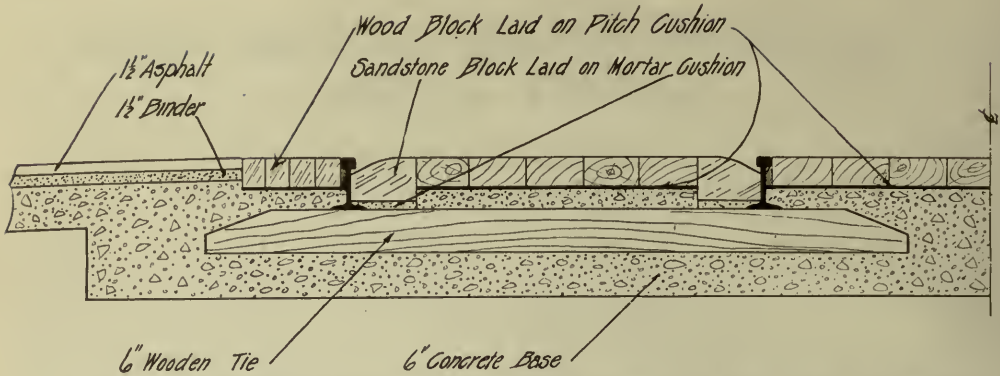
During the last season in this city the mortar cushion was abandoned and the concrete base between the rails was brought up to the level of the base of the block used. With a template this concrete base was struck off and smoothed to a sidewalk finish parallel to the finished surface of the block pavement. Upon this concrete base hot asphalt cement was placed to a depth of about $\frac{1}{8}$ of an inch, and while still warm the blocks were laid upon it and rolled, as shown in the illustration.

Where a lip girder rail was used, the wood blocks were placed from rail to rail, having the web of the rail filled with a creosoted strip of wood cut to fit the space between the web flanges and under the head, to prevent water from getting under the blocks.

The pine blocks used were $3\frac{1}{2}$ inches



PAVING WITH WOOD BLOCK BETWEEN THE STREET RAILWAY TRACKS AT OTTAWA



HALF-SECTION SHOWING METHOD OF TRACK CONSTRUCTION EMPLOYED ON ELGIN STREET, OTTAWA, IN 1919

deep, had received a 16-pound treatment, and were laid loosely after being wet down. An asphalt filler for half the depth of the blocks was used, the upper half being filled with sand brushed over the surface. Tie rods had usually been used, but for shallow rail sections it was impossible to bed properly in the concrete base without leaving an edge projecting, which interfered with the proper laying of the blocks.

This last season the tie rods were abandoned and a rail brace made from $\frac{1}{4}$ -inch steel plate was used exclusively. This brace, having a base plate that passes under the rail and is fastened to the tie, was placed on the outer side of the rail, and this method of holding the rails in place has proved very satisfactory. Either rectangular or lug blocks were used, the latter preferably upon grades of from 3 to 5 per cent because of giving a better foothold for horses.

When a tee rail is used instead of the lip girder rail, altho more satisfactory for a tram company, it gives the municipal engineer more trouble and expense.

Two methods have been used in this city where a wood block pavement is placed against tee rails. By the first method a combined vitrified filler and nose block was used to fill the web surface and form the flange groove along the inside of the rail,

and the wood blocks were placed in the usual manner. These filler blocks crushed under heavy traffic in a number of places and were abandoned in favor of sandstone blocks alongside the inner face of the rail, as shown in the section. A filler strip was not used, as the beveled sandstone blocks could be placed directly against the web, and, after the wooden blocks between the rails had been laid, were grouted to fill up any spaces between the stone blocks and the rails.

On account of the greater depth of the sandstone blocks, the concrete base had to be jogged down, and this was done by means of planks laid longitudinally alongside the inner face of the rails, which were removed when the concrete had set sufficiently.

The combination of wood block and sandstone rail block is new in this city, and the author has never seen it anywhere else. Where a tee rail is used, such a combination is very necessary and superior in every way to a brick nose block. To date it has been very satisfactory, and, as it will not grind up so quickly as other materials commonly used for this purpose, there will probably be no deep grooving alongside the running edge of rails, which causes such annoyance to vehicles turning out from tram tracks.

Public virtues are but private ones writ large. The old-fashioned exhortation to constant diligence in attending to daily tasks, whether in factory, field, laboratory, classroom, city hall or county court-house, has attained international significance in relation to the solution of reconstruction problems.

A Practical Manifestation of Interest in Child Welfare Work

By Grace L. Anderson, R. N.
Superintendent of Municipal Nurses, St. Louis, Mo.

ST. LOUIS has been working for the last four years to develop a comprehensive plan by means of which the children of the city, particularly the babies, may be safeguarded and the great loss of infant life lessened.

In 1919 a budget of \$23,000 provided for a superintendent of child welfare work, who is also responsible for the tuberculosis work, and a staff of 17 nurses. One model child welfare clinic was established in June, 1918. The clinics had previously been held in settlement houses, schools and churches, where a sort of child welfare work had been started by private agencies, because of the need felt in their localities. It was the desire of the superintendent to reestablish each clinic in its own station, which should stand definitely for health in the community. This plan was presented to the Welfare Branch of the Mayor's Committee on Reconstruction, and a plea was made for suitable, well-equipped workshops in which the work could expand as it never would while only a guest, tho a welcome one, in other institutions. These women were impressed with the need, and their chairman, Mrs. Lon Hocker, obtained the Mayor's permission to raise a fund which would supplement the

Your City is YOUR City
KEEP IT CLEAN!



FIND THE
GOOD CITIZEN

A TYPE OF POSTER USED BY THE NATIONAL CHILD WELFARE ASSOCIATION IN ITS CAMPAIGNS

city's budget and make possible the equipment and maintenance of eight model centers for one year, at the expiration of which time the city would take over the

entire support of the work. Accordingly, subscriptions amounting to \$8,000 have been obtained, and the new clinics are rapidly being opened up.

Even with the greatly increased cost of equipment, a model child welfare center can be equipped for about \$400. The rent of the centers averages about \$20 monthly. The rest of the \$1,000 necessary to establish the clinic goes for heat, light, janitor service, etc. The salaries of nurse and doctor, as well as the medical supplies, are provided by the city. The extra fund has helped to properly house a work already well established as to clientele and staff.

In selecting clinic sites, old saloons and stores have lent themselves very well to this new use. A large store can be separated by partitions into two or three rooms, and a waiting or assembly room for the mothers and babies, a workroom for the nurse, and a consulting room for the doctor can be provided. These rooms are made sanitary and attractive with white or buff paint, paper and linoleum. The furniture is white—chairs, tables, scales, filing cases, etc. An important part of the model equipment is the posters illustrating the different phases of child care, which make their appeal to the waiting mothers. For demonstration purposes, a good crib—a basket which can be used for the first weeks of the baby's life—an outfit for milk modification, a bath-tub, a model layette, and suitable utensils for teaching the preparation of cereals, etc., are essential.

The number of babies coming to these clinics averages about 40 weekly, but this number is only a small portion of what the clinic represents in child care in its immediate district. The number of babies cared for in the districts varies from 400 to 800. The mother who comes to clinic regularly represents the more progressive type. She spreads the gospel of child welfare among her neighbors, and the nurse visiting in her home sees that instruction given the mother is understood and followed, and works diligently to bring all babies in her district under observation and guidance. The decentralization of the clinic work brings the

mountain very much nearer to Mahomet.

The clinics are open each day at a regular hour, and many mothers come in for advice. Formerly the babies were graduated from clinic at the age of two, and the period between that and the school was unsupervised. Classes are now formed of these pre-school children, and the mothers are urged to bring them to see the doctor at least once a month.

Prenatal clinics are also being established, so that now the cycle of child welfare work is complete. We aim to make our clinics answer the health needs of the districts which they serve. The department of child welfare is under the same supervision as that of tuberculosis, and, where necessary, chest clinics for children over five and for adults will be held in the centers used primarily for child welfare work. Preventive work in tuberculosis is so largely a matter of examination of children and of instruction concerning them that duplication is avoided in the health districts by making the home visits by the same nurse.

Last fall we organized our districts to make ready for the predicted epidemic of influenza. Classes in home nursing were given at the centers, and an index was made of all available resources.

Mothers' clubs are a logical outcome of clinic work. One center has a recently organized club of Polish mothers, usually the most difficult to reach, but interested thru the coöperation of a trained Polish social worker.

In the establishment of such clinics the salary of the nurse is the largest item of expense. At present we have no memorial nurses in St. Louis, but what comparison is there between a monument of cold stone—in memory of a beloved wife or child—and a child welfare nurse who cares for hundreds of other children monthly?

We in St. Louis are fortunate in having the sympathy and active coöperation of the Director of Public Welfare, John Schmoll, as well as that of the Hospital Commissioner, Dr. Schutt, and, in fact, of all the agencies of the city, private as well as public.

Fundamentals in Water-Supply Investigation

By James P. Wells

Hydraulic Engineer, Rochester, N. Y.

THERE are three principal factors to be considered in choosing either a new or an additional water-supply: first, the quality; second, the quantity; and, third, the cost. To determine the quality of the proposed supply is not difficult. Bacteriological and chemical tests will do this.

Sources of Water-Supply

There are three main sources from which a municipality may obtain a water-supply: the first, and perhaps the oldest, is the method of obtaining water from driven wells; the second is that of pumping water from lakes or adjacent streams; the third is the construction of storage reservoirs, and allowing the water to flow by gravity wherever it is needed.

Many municipalities have obtained very satisfactory water-supplies from wells, but it is hardly necessary to say that many municipal supplies thruout the United States that have been obtained in this manner have ultimately proved entirely inadequate for their purpose. For a few years the wells have yielded sufficient water, and then they have gradually given out, making it necessary to go to considerable expense to obtain a supply which would be more reliable.

Pumping Water From Lakes and Rivers

In districts which are relatively flat and where it is practically impossible to obtain water by gravity, the most common method for all municipalities of any size is to pump water from some near-by stream or lake. The first matter to be determined in connection with such a supply is whether the quantity of water is sufficient and will be sufficient at all times for the needs of the city. Sometimes, as would, of course, be true in any supply obtained from one of the Great Lakes, there is no question about the quantity of supply; but if the source is a near-by stream, a very careful study of the records of rainfall and run-off on the stream under consideration must be made.

The dry-weather flow is of the greatest importance. This may be in one year only 25 per cent of what it was in another year. When one is satisfied that there is sufficient water, the quality of the water from a bacteriological standpoint and also from the standpoint of turbidity must be considered. If the water is clear and uncontaminated, no filtration will be necessary; but if there is evidence of contamination, and also if the water is turbid, even if only at certain seasons of the year, a filtration plant is a necessity.

Storage Reservoirs

Probably the most satisfactory source of supply, if it can be economically obtained, is that of a storage reservoir at some point which is high enough above the city so that the water will flow to it by gravity, thereby saving the tremendous operating expense of pumping. In the investigation of any such supply the same precautions as to quantity of water and as to quality must be taken into consideration as in the case of a supply from a reservoir. In such cases a filter plant is not always necessary, and, in fact, can very often be omitted. A large storage reservoir acts as a huge settling basin. The water at the intake will be of a much better quality than the water flowing into the reservoir.

Estimates of Cost

Nothing is more embarrassing to a municipal board that is serving the public than to ask for an appropriation and then find, after the work has been three-quarters or ninety per cent completed, that it will be necessary to raise a little more money. Perhaps the bond issue is for \$300,000, and \$25,000 more is needed. Either a new election is necessary, or the \$25,000 must be taken out of other channels where it is very badly needed. With such uncertain conditions as exist at present thruout the country, it is absolutely necessary that a liberal margin be allowed in making any estimates of cost of construction work.

The Mountain and Forest Camps of Salt Lake City

By Charlotte Stewart

Supervisor of Play and Recreation, Salt Lake City, Utah

THE municipal camp for the boys and girls of Salt Lake City has had its third yearly test and has become a permanent institution of some proportion. This year the city fathers will be asked to budget a definite fund for its equipment and perpetuation.

Salt Lake City is surrounded by mountains and canyons that are more or less inaccessible to the child camper and the family of small means, since there is no inexpensive means of transportation, no car or train service, only the hired auto or

citizen, the Recreation Department of the city has evolved a simple plan to make canyon and camp life accessible to practically every boy and every girl in the city. The plan, in brief, is this: From its budgeted funds the department has furnished supervision and direction for the camps, also part of the expense of transportation. The remainder of the expense is met by a small fee for each camper, enough to make him feel that he is no ward of the city, yet well within his industrial earning or saving capacity. As a result, a cosmopolitan



MOUNTAIN LAKE WHERE THE BOY CAMPERS OF SALT LAKE CITY TAKE THEIR MORNING SWIM

the stage with excessively high fare. These mountain retreats have therefore been practically useless to those who need them most. Moreover, the camper of a day or a week has to be restricted in his activities because of the city's water-supply. Both the city and federal governments, as a means of protecting water and forest, are constantly planning and building safe camping places, but this movement is still in its infancy.

Believing that it is the inalienable right of every child to have the first-hand experience with nature which camp life alone can give, if he is to become a really capable

group is gathered, rich and poor, well-educated and ignorant, native son and foreigner, all capable of amalgamation thru the activities of camp life, with its democratic living, with its give-and-take, its lift-and-share, its do-and-dare.

A description of the camp of 1919 is a modified picture of its two predecessors and will give a bird's-eye view of the management and operation of all.

The Girls' Camp

A site for the girls' camp was found about 17 miles from the city, in a privately owned

branch of the main Parley's Canyon, where the cottage farthest up chanced to be a large one owned by a very public-spirited man. This cottage, at request, was turned over to city use for two seasons, gratis. The third year the city paid an amount equivalent to the property's tax. The location is ideal. There is good water, a large porch, a storeroom, two dressing rooms, a kitchen and dining-room, plenty of wood, cooking accommodations and utensils, good hiking trails extending in all directions, mountain peaks to climb, flowers, trees, grasses, ferns, and a great out-of-doors crowded with spots of beauty.

Transportation to the mouth of the branch canyon was effected by the use of large auto stages, and from that point the girls, their mothers and the directors hiked the three steep miles to camp. Each girl either made at a play center her own service kit, or otherwise provided it—one specially designed to economize labor and space, and containing plate, cup, spoon, knife, fork and towels, also a personal kit with toilet articles, which, with a roll of bedding, constituted her baggage. This arrangement minimized space and taught the girls to camp simply. The rolls of bedding and the camp rations were transported by wagon the three miles, anticipating the hikers' arrival by an hour.

A series of four consecutive camps went out, each in charge of several play leaders who were indeed one with the girls. As one camp returned, another camp went out. This economized transportation. The city was districted according to recreation centers. These, with a central office, enrolled girl campers for the various periods. Advertisement was also effected thru the papers and with posters at centers and at the public library.

Cost and Management

The total expense for each girl was 75 cents for transportation and \$1.75 for the three days' rations, a total of \$2.50. Rations were purchased wholesale, and a fixed menu was printed for each day's meals. When the campers arrived they were divided into squads, each named after a local animal or a tree, and each squad with a squad leader was responsible for one meal prepared and served. The serving was done in true army fashion; each girl filed down the mess line with her plate and cup,



REHEARSING FOR THE NIGHT'S STUNTS

received her portion, found a nice, quiet spot and ate heartily in the open. The squad on duty as K. P. finished their task, polishing till everything shone, competing for a squad prize. Sleeping places were selected on the porch, on a crudely constructed platform, or on the grassy earth, where bedding was rolled out for a night beneath the stars.

The days were spent in sports and games, in tramping, climbing, reading, swinging and nature study, and in occasional adventures. Each night the camp assembled about the fire, told stories, sang, played, and did regular and irregular vaudeville stunts. Surely one hundred and seventy girls and four mothers never had a happier three days of camp life.

For this year the plan is to keep the camp open for at least two months and allow girls and women to go for three days, or as much more as they wish, at the same rate. For the whole period the camp is to be under the control and management of a regular camp director.

The Boys' Camp

A more inaccessible, primitive camping place was selected for the boys' camp at Mill D Flat, Little Cottonwood Canyon, 22

miles from Salt Lake City. In that region Nature has been very lavish in her assembling of rivers, lakes, massive mountains and forests. The exact spot chosen was in the large forested flat at the upper end of the glacier-carved canyon about five miles below the famous summer retreat of Brighton. There was found a place for the pitching of tents, timber for fuel and tent poles, water a plenty, sanitary provisions, and some camp cookery stoves and other accommodations built by the Forestry Department.

Before the day of departure in August the camp director, a good Scout with boys, arrived on the scene in a state road truck with the camp supplies and tents. He planned out the camp site with its central assembly ground o'er-topped with a flag, its encircling space for tents, and its near-by supply tent.

The boys of the town enrolled at the recreation centers and were placed in squads of six, each with a leader, and were given group instruction covering the providing of squad utensils and individual equipment. At an early hour these boys met at the starting place. The first stage of the trip, about 10 miles, was made by car; then all baggage was loaded into wagons, and the boys, alternately hiking and riding, covered the 12 miles to camp in high spirits. There each squad was given a tent to pitch and instructions for the right kind of camp making; then the fires were made and the evening meal was rationed out.

How the Days Were Spent

The morning call was followed by the snapping of timbers, the morning wash, then the breakfast of bacon and eggs. It was indeed a splendid sight to see the leader go to the supply tent and receive in true soldier fashion the day's rations, and then see the dozen or more encircling camp fires and the squads at work preparing the meal and the day's pocket lunch.

Then came the day's doings. It was

either a trip to the mountain lake for a morning swim, a day with line and hook, an exploring trip into nature's fastnesses, or a mountain hike to Brighton, to the great Twin Lakes, then over the trail to Lake Phoebe and up the ridge to the summit of Mt. Clayton. From the top of this mountain one can see the head waters of Big and Little Cottonwoods and American Fork Canyons, and the towns of Provo, Heber and Midway, and to the south stands the great peak of the Wasatch, Mt. Timpanogas. Thus the boys saw spread out before them a relief map of the mountains, lakes and cities of a great portion of their state. Nor was the least interesting feature of such trips a hike to the mines of the vicinity, where they might explore tunnel, drift and shaft, or ride on the ore cars away out over the dump. Here first-hand from the prospectors and miners they learned the secrets of the inner earth. It would not have been a real camp without a storm in the mountains, with thunder, lightning and downpour, making the trenching of tents necessary, and giving the usual soaking, with its attendant big fire for drying out.

The evenings about the camp fire were best of all, when the fun of singing popular songs or telling of the day's catch or mishap, or the jokes of a recent trip, was followed by a talk from Utah's famous Scout, Dr. Plummer, initiating the boys into the joys of camp and forest lore. In all, there were about 120 boys who had a great four days' experience with camp life and nature, at an individual expense of \$3.25. No boy was ill, all were well nourished, and they had a glorious time coming home to mansion and hovel, more truly Americans than when they went out.

The plan for another year includes securing from the Government a permanent place for a municipal camp which with some expenditure can be put in condition for all-summer use for boys of all ages, and for fathers as well.

So build your community that quickened conscience, larger vision, deeper devotion and equality of rights for all men will resolve itself into an enthusiastic zeal for personal service in the community. All who give service are torch bearers.

—Theodore Roosevelt.

New York's Town Meeting Hall

An Open Forum in the Heart of the City

DOWN thru the early beginnings of our nation, each community had its meeting house—its town hall—where citizens met to talk things over. For years New York has needed such a town meeting hall. At last, in answer to the demand, a civic enterprise is near completion which will establish an open forum in the heart of the city, where law-abiding citizens may get together and discuss their common interests. Protests against existing laws, the fitness of prospective office-holders, the desirability of pending legislation—all these things should be talked over until both sides of the question are thoroly understood.

The building now being erected at 113-123 West 43d Street aims to provide the best-equipped town meeting hall in any community. It is within a half-mile of the two great railway terminals, many of the

finest hotels and the retail shopping district. Times Square, the center of the city's entire transportation system, is within a stone's throw of the Civic Auditorium. New York has wanted, and will now have, for its discussions a hall designed primarily for public speaking and not for concerts and entertainments. Perfect acoustics will be one of the features of this new forum.

The foyer of the Auditorium will be a memorial to public-spirited citizens not now living who were the leaders of their day in public usefulness. It will be entered from the street without ascending even one step. The interior of the hall is semi-classic in design and dignified in treatment. The seating capacity will be 1,700, with standing room for 200. Every seat on the floor and in the balcony will have an unobstructed view of the platform.

The Auditorium will be available for any public purpose if satisfactory references



NEW CIVIC AUDITORIUM BEING ERECTED IN NEW YORK

are given, always with the proviso that the gatherings must be of an orderly, law-abiding character. For such meetings the only charge will be the actual cost of attendants and ushers, if they are required. Meetings of public character for which admission is charged, or which are limited to members of any particular organization, will be expected to pay a nominal rental fee of \$50 plus the actual cost of attendants. Any question regarding the use of the Auditorium will be submitted to a representative and carefully chosen non-partisan committee, which will decide each case on its merits. This municipal meeting hall, free from political control, will be held in trust for the people by The League for Political Education, the originator of this undertaking. The offices of the League and its allied organizations, The Civic Forum and The Economic Club, will oc-

cupy the fifth floor of the building, the space of the first four floors being occupied by the Auditorium. The object of these three organizations is to promote by educational methods a finer citizenship and a better social order. On this fifth floor will be a reading-room, and ultimately a political science library of about 10,000 volumes. There will also be a Bureau of Information and Friendly Service, from which may be gathered facts concerning the various kinds of educational, religious, charitable and social organizations in the city.

The sixth floor and the roof of the building will be occupied by a club for men and women, on equal terms and in substantially equal numbers. Full club service will be rendered at moderate annual dues.

When the Civic Auditorium opens its doors next summer, the goal of a quarter-century of hope and effort will be reached.

Transportation and Health

TO increase the cost of transportation tends to retard a city's expansion along the lines of community health and safety. Cheap car fares with liberal transfers have been a tremendous factor in Chicago's territorial growth and development.

Cheap and rapid transportation is also a means of preventing the crowding together of people in limited areas, with the attending damage to both health and morals that always is in evidence in badly congested districts.

The question of family health has impelled thousands of people in Chicago to seek the outlying districts where air and sunshine can be had in abundance and where there is elbow room and a chance for children to grow and develop into healthy and vigorous men and women. And cheap and rapid transportation has made this possible. The workman of to-day can travel a round-trip distance of twenty miles between his home and his work place, and do it in less time than he could have traveled half the distance twenty years or more ago. A well-known health worker said some years ago that improved transportation facilities had taken thousands of people out of the congested districts in a single ward and into neighborhoods where, with no increase in rentals, the living surroundings from a health standpoint were immeasurably su-

prior to those amid which they had formerly lived. And while there can be no accurate estimate made as to the number of lives saved each year on account of the wholesale hegira of people from bad to good surroundings, there can be no doubt that such moves do exert a direct and vital influence over both the sickness and the death rates of the city. Especially, too, are fresh air, sunshine, and open-air playgrounds important factors in promoting the healthy, normal development of growing children.

A long while ago Lord Bacon said: "There be three things that make a nation great and powerful—a fertile soil, busy workshops, and easy transportation of men and goods from place to place."

And many years later Lord Macaulay, the noted English historian, put it this way: "Of all human inventions, the alphabet alone excepted, those inventions which have served to abridge distance have done the most for human civilization."

Of course, under Macaulay's interpretation may be classed the telephone and the telegraph as agents which practically eliminate distance. But none the less does cheap and rapid transportation figure as a factor in the making of higher standards of living as directly related to the people's health and to their morals and social life.

—From the Bulletin of the Chicago School of Sanitary Instruction.

FORWARD STEPS

REPORTED TO THE AMERICAN CITY

By MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and practical value to others engaged in similar work. Photographs, plans, or other illustrative material, should accompany the articles whenever available.

CITY MANAGERS

Rating Restaurants

JACKSON, MICH.—In no other place is food liable to be contaminated more than in the restaurants and cafés where it is handled and directly consumed. Because

DEPARTMENT OF PUBLIC HEALTH—JACKSON, MICH.

Sanitary Inspection of Hotels, Restaurants, Bakeries, Etc.

300

Date

Owner

Hotel, Restaurant, Bakery

Street No.

Remarks

DETAILED SCORE

EQUIPMENT	Score		METHODS	Score	
	Per.	Allowed		Per.	Allowed
BUILDING			BUILDING		
LOCATION	3		CLEANLINESS	11	
Free from contamination			Floor	3	
CONSTRUCTION	5		Walls	3	
Well drained	1		Ceilings and ledges	1	
(Sewer or septic tank)			Windows	2	
Tight metal floor	1		Free from odors	2	
Smooth tight walls	1		Free from insects	2	
Smooth tight ceilings	1		(Flies, etc.)		
PROVISION FOR LIGHT	2		APPARATUS		
(Use floor space 1, 5%, 1)			CARE AND CLEANLINESS OF		
VENTILATION	5		UTENSILS, ETC.	12	
(Fan, 6, Suck, 2, windows, 2)			Thoroughly washed	4	
SCREENS	2		Rinsed with steam or scalding water	4	
LOCATION OF WATER CLOSET			Protected from contamination	4	
AND WASH ROOM	3		CLEANLINESS OF TABLES, ETC.	2	
(Separate from working room)			CLEANLINESS OF SINKS	2	
SEPARATE ROOM FOR WASH-			CLEANLINESS OF REFRIGER-	2	
ING UTENSILS AND HAND-			ATOR		
LING FOODS	1		EMPLOYEES		
APPARATUS			CLEANLINESS	5	
UTENSILS	4		Cleanliness and appearance	5	
(Cleanliness and condition)			Cleanliness of clothing	2	
APPLIANCES FOR CLEANING			FOODS		
UTENSILS	4		CLEANLINESS, ETC.	19	
TABLES, SHELVES, ETC.	1		Freedom from exposure	6	
(Smooth enamel tops)			Condition	6	
REFRIGERATOR	5		Storage	6	
Separate compartments			Cleanliness	6	
Convenience	2		GARBAGE		
WASHABLE WORKING SUITS	2		HANDLING AND CARE	7	
WATER	3		Location of receptacles	4	
Room for scalding	2		Prominence of handling	3	
Clean and abundant	1				
Total	40		Total	60	

Equipment + Methods = Total

NOTE—If there is evidence of the presence of a dangerous disease among attendants, the total score shall be 0.

Owner or Agent

Inspector

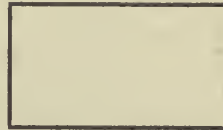
SANITARY INSPECTOR'S CARD USED IN JACKSON, MICH.

CITY OF JACKSON

DEPARTMENT OF PUBLIC HEALTH

THIS IS TO CERTIFY that the food establishment of

located at
has been inspected by this department and given a score of



This card remains the property of the CITY OF JACKSON and must be kept in a prominent place.

Any unsanitary condition at any time may lower this score.

DISPLAY CARD FOR WINDOWS OF FOOD ESTABLISHMENTS

of the channels thru which the food passes before reaching the kitchens, much of it is here found unfit for human consumption, but there is also great possibility of the transmission of disease by those who handle food.

The Department of Public Health of Jackson, Mich., realizing these facts, has required all those handling foods to pass a physical examination. Complete records of the physical fitness of all who are employed in local restaurants are kept on file. A score card system has also been established which standardizes the requirements and makes it possible to show the proprietor exactly wherein his equipment or his methods are at fault.

In this system of scoring 60 points are allowed for methods and 40 points for



EXHIBIT OF WEIGHTS AND MEASURES IN THE GRAND RAPIDS "CITY SHOW"

equipment, thus giving the place with clean conditions an advantage over the place with better equipment. The location, light and ventilation of the building are first considered, and then the apparatus for keeping the equipment clean. This portion of the score is classified under "Equipment." The cleanliness of the floors and walls, the care and cleanliness of utensils, tables and refrigerators, the appearance of employes and the handling of garbage are classified and scored as "Methods." Rating places are scored once each year, but are inspected frequently, and any unsanitary condition existing at the time the inspection is made lowers the score.

The use of the score card system has helped to secure better conditions in eating places. This is partially due to the fact that the score is seen by the public who patronize the restaurants, and therefore each proprietor is desirous of having his record high.

The ordinances of the city of Jackson give the Food Inspector power to close any public eating place which is below standard. In most cases a warning is all that is necessary, and by this means our restaurants are kept in sanitary condition.

A. W. D. HALL,
City Manager.

The "City Show" in Grand Rapids

GRAND RAPIDS, MICH.—The Municipal Exhibit in Grand Rapids, or what was known as the "City Show," was held January 19-24. Every city activity that is supported by direct taxation was displayed, the fundamental of the whole undertaking being to make clear what the functions of the various departments are, how each department is operating, and what efficiency is being attained. Each exhibit was developed along the line of service which that particular department is giving to the public.

The Exhibit was held in the Armory and occupied the entire floor space and the galleries. Booths were assigned to the following departments: Health, Meat and Milk Inspection, Infant Clinic, Housing, Parks, Recreation, Forestry, Assessors, Comptroller, Treasurer, Purchasing, City Planning Commission, Social Service, Library, Clerk, City Commission, Weights and Measures, Smoke Inspection, Streets and Engineering, City Manager, Police, Retail Markets, Signal Service, Electrical Inspector, Fire, Museum, Water and Light, Schools.

Nearly one-third of the space was given over to schools. Music was furnished by the High School orchestras and bands. The Exhibit was open from 10 in the morning



INSTRUCTION IN THE CARE OF TREES, BY THE GRAND RAPIDS BUREAU OF FORESTRY BOOTH IN THE MUNICIPAL EXHIBIT

until 10 at night, and the morning session was given over to the smaller school children. The Attendance Committee arranged that all children of the city above the fifth grade in public and parochial schools should be given an opportunity of visiting the Exhibit. The booths were uniform, and the Armory was beautifully decorated. The various exhibits were a revelation to many citizens who had had little knowledge of the actual operation of the city departments. It was an unusual opportunity for the children, in the field of civics, and they came in numbers which proved their interest. The estimated total attendance for the week was between fifty and sixty thousand.

It may be worth while enumerating the titles of the various committees that were in charge. They were selected from the citizens at large who were interested in making the Exhibit—backed by the city—a success, and were as follows: General, Decoration, Floor, Subject Matter, Booth, Publicity, Program, Screen, Motive, Attendance, Invitation, School Attendance, Space, Historical, and Financial. The undertaking has proved a very satisfactory means of educating the public on the functions of the municipal government.

FRED H. LOCKE,
City Manager.

PUBLIC LIBRARIES

The Public Coöperates in Newspaper Publicity for a City Library

ST. PAUL, MINN.—“The ideal city is the city of ideals” is one of the slogans of St. Paul. It is for this reason that civic and business organizations are emphasizing the importance of wider and better library service, and it is for this reason, too, that the newspapers are giving a large amount of space to library and literary news.

In two respects the newspaper publicity which the Public Library of this city is receiving in the St. Paul *Pioneer Press* is unique: the book department inaugurated in this newspaper in May, 1919, is the only one known to be edited by a city librarian, and the only one in which the reviews are written by readers rather than by reviewers.

The accompanying illustration shows the heading of this department in the issue of January 18, 1920. Reviews of three books are given, a notice of the writing of Olgin on Russian literature and social thought, also ten paragraphs of interesting notes on authors, books and periodicals, and a list

THE NEW BOOKS REVIEWED BY READERS OF ST. PAUL

They Tell What They Think of Late Arrivals at
the Public Library.

Edited by City Librarian.

Note—Readers' questions with regard to books should be addressed to the City Librarian. Answers to these questions of general interest will be published in this column.

War Psychology.

"THE WAR AND MEN'S MINDS,"
by Victoria de Bunsen. London,
John Lane, 1919. 185 p.

This book renders a distinct service to the American reader. It is a

erature, Prof. Cunliffe refers to Galsworthy's "Man of Property" as his best novel.

Miss Amy Lowell says that Louis Untermeyer's finest work is his volume of parodies entitled "And Other Poets." She ranks it among the great parodies of literature.

William Salter's "Nietzsche the Thinker," recently published, is subscribed by H. M. Kallen as the book on Nietzsche in the English language, and perhaps

NEWSPAPER PUBLICITY FOR THE PUBLIC LIBRARY OF ST. PAUL

of additions to the library, classified under the heads of Literature, Biography, History, Industrial Arts, Music, Miscellaneous and Fiction. The books reviewed are: "The War and Men's Minds," by Victoria de Bunsen; "My Own Times," by Lady Dorothy Nevill; and "What Industry Owes to Chemical Science," by Richard B. Pilcher and Frank B. Jones.

It will be noted that there is sufficient variety to interest several classes of readers, and even the casual perusal of these columns gives one an impression of the value of the coöperation between library and readers here illustrated.

W. D. JOHNSTON,
Librarian.

CITY ENGINEERS

Sunday Feature Section Edited by City Engineer

PORT ARTHUR, TEX.—Until last year all improvement work in Port Arthur was done by contract. In the spring of 1919, however, when the bond issue authorizing the improvement of 41 miles of streets was carried, there was strong opposition to the city's doing its own work by day labor. The

council of city officials, nevertheless, decided in favor of day labor, and as soon as the work was begun it was made the policy of the Engineering Department to publish full plans and figures in order that all taxpayers might know how the city was spending their money. This has proved a marked success in every way and has converted many of the earlier objectors.

As a part of this publicity the Port Arthur *Daily News* now carries in its Sunday edition a complete page prepared and edited by the City Engineering Department. The following quotation from the first issue of this feature page describes in detail the object of this form of publicity:

In presenting this page to the taxpayers and citizens of Port Arthur the city's Engineering Department requests *The Daily News* in this, the initial issue, to make a word of explanation.

This department is working and has worked with the full realization that its personnel are employees of the taxpayers and placed in charge of certain important work thru the regular administrative channels of the city government. It is in this realization of the relation of employee to employer that this department of publicity is deemed necessary, and *The News*, with the coöperation of the Engineering Department, will publish an account of the progress made and interesting facts and figures from the department records each week.

While the space in this issue will be devoted largely to the new street improvement work,

Your Money; How the City Is Spending It

**The Daily News to Place
Facts and Figures Before
Tax Payers Every Sunday**

**FIRST SHELLS TO
ARRIVE MONDAY**
What the City Will Pay
for Material. How
it is Handled

PAVING MATERIAL USED.
QUANTITY AND COST
FOR 50 FEET.
The specifications for the new
street improvements were laid out by
new way 50 feet in width with an
center of raised street topped with
rolled gravel. Eight yards to be used
in each block, with a dirt shoulder,
rolled on each side.

**ARE CONSIDERING
DRAINAGE FIRST**
Why Engineers Started
Work on Dallas
and Spent

**Busy Scene on Streets
When Lumber Arrives to
Start the Paving Work**
Gangs Work on Culverts First. What Material
is Required and the City's

HEADING OF NEWSPAPER PAGE PREPARED BY CITY ENGINEERING DEPARTMENT OF PORT ARTHUR, TEX.

it being uppermost in the minds of the citizens as a most necessary improvement at this time, other issues will be devoted to drainage, sewerage, their construction and operation, with all information as to completed and proposed improvements in all departments.

In connection with what has been accomplished there are many interesting facts contained in these records which have not been published and which will be incorporated in this report from time to time along with the account of progress on the current work. There are facts of interest concerning the pumping plants alone which will have their place with a brief history of the progress which has been made in the drainage and sewer systems to date.

An appeal is being made for the coöperation of every citizen in the city to the end of providing Port Arthur with every improvement possible with the funds available, and helpful and constructive criticism will do much toward this end.

CLARENCE E. RIDLEY,
City Engineer.

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**PARK
DEPARTMENTS**

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Fort Wayne's Covered Public Market

FORT WAYNE, IND.—The city of Fort Wayne has always maintained a largely patronized public market. Until recently it was held in the open market space, usually uncomfortable from the sun and frequently interfered with by rain. Some years ago it was decided that a covered market should be provided, and the City Council commenced the accumulation of a building fund for that purpose. This was continued for about five years, by which time the fund had grown to a sufficient sum to justify undertaking the work.

Competitive plans were asked for from home architects, and the one shown in the illustration on page 253 was adopted. The tables and columns are of concrete, the roof of wood with tile covering, the ceiling

of ornamental steel, paneled with heavy wooden beams. The market space is 150 feet in width and 500 feet in length. The building runs thru the center, giving ample room on either side for backing up the market wagons to the sales tables. The roof extends about 8 feet on either side, giving protection from sun and rain. Two stalls are arranged between each pair of columns. These are rented at \$15 each for the year, the renter being permitted to retain the same stand from year to year, but not to transfer his lease to another. If a lease is given up it is then awarded to the person occupying the head of the waiting list, which usually numbers from forty to fifty.

The stalls would easily rent at \$25 each, the price first put upon them by the city. The gardeners, however, went into court and succeeded in establishing the contention that under its charter the city could only make a charge sufficient to pay interest upon the investment, provide a depreciation fund, keep up repairs and insurance, and reimburse the city for the daily cleaning up of the market space. The court fixed the rental of the stalls at the price now charged. The number of stands being insufficient for all, many gardeners are still compelled to occupy adjacent streets.

The market is held on Tuesdays, Thursdays and Saturdays, with an average attendance of buyers of about 7,000. Fort Wayne has a population of about 90,000. Prices are about the same as at the best retail stores, the chief advantage to purchasers being in the greater freshness of the vegetables and food offered, and that the profit on the sales made goes directly to the producer, thus encouraging production and making it unnecessary to ship in supplies from outside sources. The market is under the jurisdiction of the Department of Public Parks. Any suggestion to dis-



THE COVERED CONCRETE MARKET IN FORT WAYNE, IND.

pense with it would meet with almost universal opposition from Fort Wayne citizens, because of the belief that without it store prices would be increased.

DAVID N. FOSTER,
President, Department of Public Parks.

Park Stoves for Cooking Picnic Dinners

TOPEKA, KANS.—Considerable success has attended the efforts of the Park Depart-

ment to provide means by which park picnic parties can prepare hot dinners. Outdoor stoves were introduced several years ago, and there are now eight of them in operation. These stoves are built of brick and mortar. Each is 2 feet wide and $2\frac{1}{2}$ feet high, and at one end the stove is fitted with a brick chimney 6 feet high from the ground. The top is equipped with two steel plates, each having two holes with steel covers like a regular cook-stove. The



COOKING A PICNIC DINNER IN A TOPEKA PARK

simplicity of the design and the attractive finish make them very useful additions to the park's picnic grounds.

It is essential that such stoves be made as nearly vandal-proof as possible, for the public are not always satisfied with the conveniences provided for them and from time to time undertake to rearrange the equipment presumably to roast a pig, or something larger than the steak and vegetables that ordinarily make up the bulky portion of an outdoor meal. However, the majority of persons who use these stoves take good care of them, and the caution is interjected here for the benefit of park superintendents who may have to deal with the disorderly element.

We have found wire receptacles for trash of great assistance in keeping the ground about the stove in good order. Wood has been provided so as to preclude the possibility of breaking down young plants or shrubs to get firewood. One of the conveniences appreciated by the public in Gage Park is a source of fresh water close to each of the stoves. Near one there is a deep well equipped with a pump, and the others are near hydrants carrying city water. Our experience indicates that these stoves are used from early spring until the weather becomes too cold to enjoy outdoor parties.

E. F. A. REINISCH,
Superintendent of Parks.

Pure Water Greatly Reduces Typhoid in Ontario, Canada

Activities of the Provincial Board of Health Show Beneficial Results

A STUDY of the typhoid death rate in Ontario, Canada, for the eleven years from 1908 thru 1918 gives an idea of the real value and effectiveness of public health work in relation to pure water-supplies. The Board has been particularly active in obtaining pure water for domestic purposes. It has actively advocated and secured the installation of filtration plants, sterilization with liquid chlorine, and the use of typhoid vaccine in many communities.

There have been 454 fewer deaths-for the period 1908-1918 on account of the activities of the public health authorities in reducing the death rate from typhoid fever. The following table shows the typhoid fever death rates:

in typhoid deaths would seem to be \$2,088,400. In addition, it must be remembered that every death from typhoid means that about 15 have had the disease and successfully combated it, but that each has lost one or two months' time and has had to pay a doctor's bill. Figuring the financial loss at \$300 for each case of typhoid which was successfully combated, we have another total of \$2,043,000, making a saving of \$4,131,400 to the Province of Ontario alone in its fight against typhoid.

Let us consider the debit side of this account. It amounts to \$10,000 a year, which is the expenditure of the department for this work. However, the figure of \$110,000, for the eleven years, subtracted from the grand total still leaves a balance in favor

	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
County	20.5	25.1	22.0	16.1	10.9	13.3	10.0	9.45	8.1	6.58	5.09
City	37.8	34.3	51.5	35.8	27.7	17.3	12.4	9.43	12.1	7.5	9.6
Towns	107.1	67.7	56.4	62.3	47.0	46.0	47.4	38.0	52.2	31.4	17.2
Average for Province.....	29.7	29.9	31.5	25.3	18.7	16.7	13.5	10.7	12.5	8.4	7.52

George Chandler Whipple, Professor of Sanitary Engineering, Harvard University, estimates the value of a life between the ages of 15 and 35, which is the period within which most typhoid cases occur, at \$4,600. From this the saving thru the preservation of the 454 lives in Ontario by the reduction of the fight against typhoid of \$4,021,400. Surely for the sake of the country and the world, when lives are as valuable as to-day, this wonderful saving is worth serious consideration by those communities whose anti-typhoid activities are not keyed up to the highest pitch.

New Concrete Bridge in Fairmont, W. Va.

Attractive Lighting Scheme Includes Concrete Posts for Lights and Trolley Wires

By Charles F. Bornefeld, C. E.

IN order to connect the densely populated residential section of Fairmont, W. Va., known as the South Side, with the heart of the business and commercial district, a concrete-steel arch bridge of the open spandril type was constructed in 1917-1918, over what is known as Coal Run Ravine. Its completion has solved quite adequately the transportation problem which existed between these two rapidly growing sections of the city. The new bridge replaces an antiquated, unsafe steel viaduct structure built in the same location over 20 years ago.

The structure is most attractive for this location, with its three equal arch spans, each 116 feet in length, with 28-foot rise. These flat arches are carried on high, square, tapered piers, making a total height from the roadway to the bottom of the ravine of 96 feet. The design includes two 7-foot sidewalks, a 40-foot street paved with creosoted wood block, and a double-track trolley system located on the center line of the bridge. This system accommodates the inter-residential electric car service, as well as the interurban trolley service between Fairmont, Clarksburg and other suburban towns. The total length of the bridge is 455 feet.



COMBINATION CONCRETE LIGHTING AND TROLLEY WIRE POLE BUILT AS AN INTEGRAL PART OF BRIDGE RAILING

The beauty of the design lies in the simplicity of its lines, the effect produced by shades and shadows, and the proper propor-



THE SOUTH SIDE CONCRETE ARCH BRIDGE RECENTLY COMPLETED IN FAIRMONT, W. VA.

tion of the related units. The concrete poles which carry the trolley wires are incorporated in the parapet wall or hand-rail. They are placed 136 feet apart, and carry appropriate solid bronze fixtures for 300-watt lamps, which provide good lighting for the entire length of the roadway of the bridge.

The city of Fairmont paid a little over \$174,000 toward the final cost of the construction of the bridge. The total cost of the improvement was approximately \$200,000, which includes the contractor's compensation of \$15,600, as well as right-of-

way purchases amounting to \$23,000, engineering fees, bond issue expenses and incidental city administration expenses. The old bridge was sold as scrap iron for approximately \$20 per ton. The new bridge was built under the administration of Mayor Anthony Bowen and A. L. Lehman, Commissioner of Streets and Bridges. The Concrete-Steel Engineering Company, New York City, designed the structure and supervised the construction, and the John F. Casey Company of Pittsburgh, Pa., was the contractor on a "cost-plus-fixed-compensation" basis.

America's Traffic Accidents Too Numerous

Since it is impossible to trace every traffic accident that eventually results in death, it is impossible to say exactly how many people are killed in any city by traffic accidents. The most accurate reports we have to go by are probably those of the police.

In Washington, for the year ending June 30, 1916, there were 33 deaths.

In Washington, for the year ending June 30, 1917, there were 52 deaths.

In Washington, for the year ending June 30, 1918, there were 73 deaths.

In Washington, for the 6 months ending December 31, 1918, at rate of 82 deaths per year.

In New York, for the year 1915, there were 659 deaths.

In New York, for the year 1916, there were 644 deaths.

In New York, for the year 1917, there were 714 deaths.

In New York, for the year 1918, there were 679 deaths.

While the foregoing figures show a yearly increase in traffic deaths for Washington, the New York figures have run pretty even. The New York rate would undoubtedly have been cut very much had that city persevered in an educational campaign, thereby making traffic regulation automatic, instead of adopting an enforcement campaign by the police. Education

costs but a fraction of enforcement and brings about infinitely greater results.

The death rate from traffic accidents in New York in 1918 was 679. The death rate in Washington for the six months ending December 31, 1918, was at the rate of 82 a year. On the basis of 425,000 people in Washington and 6,000,000 in New York, it is found by proportion that there should have been 48 deaths in Washington from traffic accidents in 1918 instead of 82, to keep the rate the same as in New York.

It is interesting to know that if the death rate from traffic accidents in Washington were extended thruout the United States, 21,221 people would have been killed in 1918, whereas if the New York rate was similarly extended the number would have been 12,450.

With regulations and some simple but necessary precautions, it should be easy to reduce the traffic accidents in every city and town of the country far below what they are.

(From Bulletin No. 52, Highways Transport Committee, U. S. Council of National Defense.)

Fewer Horses—More Motor Trucks

According to a "Stable Census" conducted by the Sanitary Bureau of the New York City Health Department, of 10,584 stables in New York City in 1917, there were but 7,920 remaining in 1919. In the same length of time the number of horses had been reduced from 108,036 to 75,740. While the decreases were most rapid in the case of private undertakings, neverthe-

less city, state and federal services also showed pronounced reductions, there being 52 less stables and 586 fewer horses. Reporting these facts, the *Wheeling, W. Va., Register* claims that "the motor truck is rapidly emptying the stables of the nation," and a glance at the growing sales totals in this industry would seem to prove the truth of the statement.

Exterminating the Mosquito

Extensive Work in Nassau County, L. I., Proves Profitable

By C. Chester Painter

Secretary, Nassau County Extermination Comm'ssion

FOR the last few years, Nassau County has been actively campaigning against the mosquito. This work has been carried on by the Nassau County Mosquito Extermination Commission, which was organized in the early summer of 1916 under Chapter 408 of the Public Health Laws of the State of New York. An idea of the magnitude of the Commission's work may be gleaned from the facts that Nassau County comprises about 300 square miles of territory; that it includes some 90 or more villages; and that there are approximately 20,000 acres of salt marsh within the county limits, some of it on the north shore, but most of it on the south shore in a strip 17 miles long, averaging $3\frac{1}{2}$ miles in width.

It is well known that mosquitoes breeding on salt marshes are migratory. They have been found as far as 40 miles from their breeding places. So, of course, the first problem to be attacked by the Commission was the drainage of the meadow lands, which were prolifically breeding mosquitoes that infested the entire county. Each year a contract is let for the installation of a certain number of feet of ditches. To date, approximately 5,000,000 feet of ditches have been dug, draining about 16,000 acres of our total salt marsh lands, leaving about 4,000 acres still to be drained.

The Ditching System

Our ditching system is very elastic. It is neither the well-known parallel system nor the much advertised checker-board system. It is a sort of combination of the two. A careful inspection is made of the meadow to be drained, and then the ditches are staked according to the peculiar conditions of each area. The distances between the main ditches vary from 100 to 160 feet. A suitable number of spur and cross ditches are installed, according to the character of the meadow, the length of the main ditches and the prevalence of salt ponds and depressions. It is not safe to place any dependence upon seepage on the meadows.



OUTFIT USED TO OIL CATCH-BASINS IN NASSAU COUNTY

The most satisfactory salt meadow ditch is a deep, narrow one with straight sides and a level bottom. If the ditch is dug 30 inches deep, the drainage will be excellent and the cut will go below the sod roots and thus insure a bottom free from grass. A width of 10 inches is about right to keep the sun from penetrating the ditch and aiding the growth of vegetation along the side walls of the ditch. When, however, sandy meadow is encountered, a wide V-shaped ditch, varying in depth from 8 to 20 inches, proves most efficient.

Any ditching system, however adequate, must be well maintained to guarantee its effectiveness. In order to carry on the maintenance of our ditched areas, we divided our drained salt marsh into sections, putting each section in charge of an inspector with a small labor crew, and making the inspector responsible for the condition of the ditches in his section. These crews do the spring maintenance and keep up a systematic patrol during the whole season. They also do minor extension work, such as spurring an overlooked salt pond, or filling with sods a newly formed depression. This plan of maintenance is giving excellent results.



SEARINGTOWN, N. Y., SWAMP BEFORE DRAINAGE

The Upland Work

It was not until an appreciable proportion of the salt marsh was under control that we turned our attention to upland problems. It was in 1918 that we began to concentrate upon this phase of our work. The first step was general inspection to locate all actual and probable breeding places. Then all violations, some 600 at the present time, with the number constantly increasing, were listed, a system was inaugurated under which oiling is combined with inspection, and a schedule was arranged whereby each violation is looked after every six to eight days.

It should be understood that these are all field violations and do not include *Pipiens* breeders, such as cesspools, wells, rain barrels, tin can dumps and other purely local breeding places. These violations are cared for by that part of mosquito extermination termed house-to-house inspection; their control will constitute the last step in our campaign and will not be undertaken until the field work is reduced to its inevitable oiling and maintenance.

Altho our upland work, perhaps, is not so vast as our salt marsh work, it is far more complex. Each violation is a problem in itself and must be handled according to its own particular characteristics. If the violation is a pond, it must be cleaned or drained or, frequently, lowered; or, if no one of these methods is possible, and the pond is

breeding mosquitoes, it must be oiled. If the violation is a brook, all the vegetation must be cut away from its banks and it must be carefully cleaned and leveled so that a fairly rapid flow of water will be maintained. If the violation is a swamp with a satisfactory outlet, it must be ditched so as to carry the water off to the outlet. Often, however, there is no outlet to a swampy area. Then it is advisable to dig one large ditch thru the lowest portion of the swamp, with lateral

ditches if necessary. This will dry the area and confine the water to the ditches, which can be oiled more easily and more economically than could the swampy area, had it been possible to oil the latter at all. Also, in the case of a swampy area, we have found it both effective and economical to resort to dynamiting. Usually, just below the surface there is a stratum of clay ranging from 6 to 8 feet in depth, and beneath this, the sandy soil characteristic of Nassau County. When the stratum of clay is broken up by a dynamite charge, a natural seepage results and the swamp soon becomes dry. When drainage is accomplished by dynamiting, no maintenance is necessary. This, of course, is a considerable argument in favor of its use whenever conditions permit.

The Oiling of Catch-Basins

In conjunction with the upland work, there is the question of catch-basins, and where there are as many municipalities in a territory as there are in Nassau County, the problem of oiling the catch-basins acquires rather gigantic proportions. For a while we followed the plan of oiling the catch-basins by means of sprinkling cans. It soon became evident, however, that some of our more important work was in danger of being neglected because so much time was being consumed on this catch-basin proposition.

One of our men immediately came to the rescue by devising an apparatus composed of a 42-gallon, portable pressure tank, mounted on a truck and equipped with 24 feet of hose, at the end of which is attached a sprayer. A picture of the outfit in operation accompanies this article. The truck is driven to the catch-basin, a man jumps off the back, applies the oil by the mere pressure of his thumb, and is ready to go on. The carrying of the oil from truck to catch-basin and back and its resultant loss of time; the considerable waste of oil caused by the surplus amount unavoidably applied when the oil is poured on the surface instead of sprayed; and the general inconvenience and awkwardness of handling the sprinkling cans, are all overcome. Since we have been using this apparatus, we oil our catch-basins in one-third the time previously required.

The Work Has Paid

In conclusion, it might be well to give a few statistics showing the results of our work as a whole. These can best be shown, perhaps, by a consideration of our mosquito collection data and the comparison of malaria cases reported annually.

It is our custom to make weekly night collections of mosquitoes at 52 stations thruout the country during the season from May to October. These collections reveal that there are fourteen kinds of mosquitoes in Nassau County, four of the salt marsh variety and ten of the upland variety. Our 1919 mosquito collections show that about 50 per cent of the salt marsh mosquitoes caught in this country were taken east of the drained meadows. The communities adjacent to the drained marshes were practically free from Sollicitans, the prevailing salt marsh mosquito. In spite of the excessive rainfall after the middle of July, 1919, the total number of upland mosquitoes caught in 1919 was 382, which compares favorably

with the number, 512, caught in 1918. It is also interesting to note that in 1919 more than 75 per cent of the upland breeding was *Culex Pipiens*, the house-to-house mosquito, against which we are not campaigning.

Another indication of the success of our work is the very gratifying malaria statistics of the past few years. The data have been compiled from weekly reports of physicians within the county.

COMPARATIVE MALARIA SUMMARY, NASSAU COUNTY, L. I.

	Annually to 1916	1916	1917	1918	1919
No. communities reporting....	4	4	7	19	18
No. doctors receiving reports. . .	..	..	41	111	99
No. doctors reporting.....	..	..	23	35	46
No. reports received.....	..	..	133	79	289
No. cases reported—					
New .....	..	..	51	5	3
Recurrent .....	..	..	17	1	8
Total	475	56	68	6	11

The successful prosecution of the work has been due in no small measure to the interest and coöperation of the Commissioners, Hiram R. Smith, of Hempstead, L. I.; John T. Pratt, of Glen Cove; Anton G. Hodenpyl, of Locust Valley; Dr. Arthur D. Jaques, of Lynbrook; Daniel Morrison, of Freeport, and Abraham Adelberg, of Cedarhurst; also to Chief Engineer William H. DeMott, of Freeport.



SEARINGTOWN SWAMP AFTER BLOWING THE BOTTOM OUT WITH DYNAMITE

Fire Prevention as a Life-Saver

An Appeal to Fire Marshals and Others Responsible for Human Safety

By James R. Young

Insurance Commissioner and Ex-Officio Fire Marshal of North Carolina

NATURALLY, in speaking of fire prevention we turn to property loss—and well we may, for so immense is the annual loss that it is nothing less than an unpardonable fault, if not a crime. At least two-thirds of it is easily preventable by the exercise of ordinary care; to say nothing of what can be saved in having proper apparatus, trained firemen, and a sufficient water-supply. Why longer erect unsafe buildings and allow such conditions on our premises as are calculated to start and feed fires?

Property Loss from Fires

In the United States and Canada we have an average loss of \$250,000,000 each year. These are big figures, and, unfortunately, are hard to be taken in—practically \$500 a minute. Do you realize what this loss is and means? It exceeds the annual production of gold, silver, copper and petroleum. Even while I am talking, fortunes are burned up. Factories, stores, theaters, hotels, churches, schoolhouses and dwellings are in flames. A new fire starts every three minutes. There is a continuous conflagration. Men, women and children are fleeing for their lives before the Fire Fiend!

In the midst of the late world war, when food meant so much in feeding the armies of our allies, as well as our own, one elevator fire in Chicago destroyed enough wheat to make 50,000,000 loaves of bread; one in Brooklyn destroyed 700,000 bushels of grain; one in Rochester, N. Y., \$1,000,000 of grain; and a stock-yard fire in Kansas City destroyed 11,000 cattle and 33,000 hogs.

No one true to his country, his people, himself, can fail to wish to stop this great waste. The property destroyed helps no one. Whether a loss to the owner, frequently representing the savings of a lifetime, or paid for by insurance, it represents so much wealth—and is gone forever. If replaced, this must be done with material, toil, labor, and expense that might be more profitably used in building up rather than in replacing.

For years, with increased vigor and impetus, a great fight has been waged against this loss, which is largely due to ignorance and carelessness. The facts and conditions are laid before us. We read and hear, but somehow do not take them in—do not realize what they mean. The facts are published in books and leaflets. Posters in striking and even horrible form are used. The press, our mighty educator and reformer, gives its columns to the work. The people stop, express their surprise and wonder, and then pass on with little further thought of this great scourge, and with even less action in behalf of fire-waste prevention.

As an educational subject, as a live economic question, as a call to service to all, this has no superior. It affects more people than war, pestilence or famine and hurts more families and individuals than all the business failures that reach their millions in property loss.

In my state we have adopted as our motto and slogan, "Make North Carolina safe for life and property." Upon the Insurance Commissioner, as ex-officio Fire Marshal, has devolved the enforcement of the Fire Marshal Law, enacted in 1899, the state building code, enacted in 1905, and the statute governing fire escapes and proper exits, enacted in 1909. These statutes are of vital interest to our people; they call for earnest, active work on our part and our best efforts to elicit aid from every available source.

Loss of Life from Fire

I need not dwell further upon the immense loss of property by fire and the duty of saving it. There is a still more urgent reason for fire prevention—the loss of life from fire. Several years ago I began to clip from newspapers accounts of loss of life by fires and was surprised to find that I clipped accounts of the deaths of from 150 to 175 each year in my state. Those to whom I told this would hardly believe it and insisted there must be some mistake,

altho I had the clippings.

After our Health Department established a Bureau of Vital Statistics, I went to it for my figures, and received the report for 1916 as 327 deaths, for 1917 as 316 deaths, and for 1918 as 300 deaths from fire in North Carolina, while for the first three months in 1919 the average was two a day. In a campaign to enlist the active aid of every man, woman and child in this work, these data formed a wonderful weapon in the warfare against fire waste. Property could be replaced; new factories, stores and dwellings could be erected; but who could restore a single life lost by fire?

It appears that three-fourths of these deaths from fires are those of women and children, and three-fourths of these are *helpless little children*. With this story I caught the interest of the children, and the mother instinct in our women was touched and they responded. This, perhaps, accounts for the unusual aid and coöperation received from the women and children. Over 1,100 North Carolina Safety Leagues have been organized among the children of the state, representing 35,000 children, and the State Federation of Women's Clubs has given active aid. The North Carolina Safety Leagues are federated with the State Federation of Women's Clubs, and there is full coöperation.

Using North Carolina's percentage of fires as a fair basis, you will readily find that there are annually over 23,000 deaths from fires in the United States and Canada. Shall we, as an enlightened and Christian people, stand for this? Certainly not! There is no excuse for our people, thru ignorance and carelessness, to sacrifice the lives of women and children in smoke and flame.

The Fire Demon's Greatest Ally

Many people are ignorant of what will cause a fire. They are careless about doing things or allowing conditions that will start or feed fires. Laws to prevent such conditions are not heeded. Many city and town officials and legislators are hard to reach and to be made to see the necessity of precautions and care. In opposing a building code brought before a committee of our Legislature for enactment, a senator said that if this law was passed he could not kindle fires with kerosene in his home. I said, "Senator, I hope you do not now."

"Yes, I do," he replied. "Then," said I, "what about your servants?" And he replied that he did not allow them to do so. Of course we all know that servants will imitate their employers in habits about the home.

A legislator who opposed the Safety Match Bill said that he did not favor safety matches, as he could not strike them on the seat of his trousers. Yet in one year this law and its enforcement saved our people in North Carolina over \$40,000.

My appeal to all fire marshals is to save life and to realize what a wonderful opportunity is offered for service in this direction. It is more than preventing fires, more than lessening the actual destruction of property by fire; it means the saving of lives when fires do come. Of course, the nearer fire-proof you build, the nearer safety to life you build; but even in fire-proof or fire-retardant buildings there may be smoke and other panics causing loss of life.

In many cases the builders feel they cannot afford to build a fire-resisting, much less a fire-proof, building. This may or may not be true, tho there never was a time within my knowledge when the costs of fast-burning and fire-proof buildings were so close together. But for one thing I plead, that all buildings—from frame to fire-proof—shall be so constructed, equipped and kept that in case of fire the occupants may be saved. This can be done, but it calls for more care and attention than is usually given it now. It is bad enough to find that lives are lost thru oversight in keeping buildings in proper condition, but construction is more deliberate. You plan your buildings with the use of the best architects; you do it deliberately; and to plan without care for safety to life is criminal in the extreme. We exercise too little care in building our homes to make them less liable to burn, and even less care to make them safe for ourselves and our families in case of fire. How many of us give any attention to this or have our architects do so?

Theaters are too often built with little thought of safety to patrons in case of fire—having inadequate exits and often allowed to be crowded beyond the limits of safety. With scores of lives at stake, we neglect even the most common precautions. How few of our public buildings, like hospitals, sanatoria and hotels, are planned for safety

to life, and how often are even the precautions taken nullified by a careless use and handling of them!

We pass laws compelling our children to attend school, and then put them in dormitories and school buildings that are a menace to their lives, and practically shut them off from all but a bare chance to escape in case of fire. School buildings, of course, are subject to the fire dangers of other buildings; but their greatest menace to life lies in rapid burning and the smoke panic. The first is overcome by fire-proof construction. The latter will get in its work even in a fire-proof building, as the smoke spreads rapidly and produces a panic even when there is no real danger of fire. We are told that 80 per cent of the casualties in school buildings are from panics when the subjects are not touched by fire.

We must put up fire-escapes that the teachers fear having the pupils use when there is no excitement, and rely on fire drills that fail amid the smoke of a rapidly spreading fire. It is well to have fire drills, but not to rely on them to the neglect of other more needed precautions. The outside fire-escape amounts to only a small per-

cent of safety in the average building.

After a careful study, I am convinced that the smoke panic can be handled only by the double-tower stairway and the elimination of all inside stairways and openings between floors. Buildings so equipped have been found to be just as convenient as any others and fully as cheap. In my state we are now erecting no other class of school buildings. We prefer safety for our children to anything else, and in this way we get safety and the other desirable conditions in our schools instead of the menace to life found in the average school building.

Are we undervaluing human life, or have we simply grown careless in its protection? We should spare no means for safeguarding lives. The automatic sprinkler, one of our most efficient agencies in fire protection, is a great life-saver and should be more generally installed. It will richly pay to install these sprinklers in schools, dormitories, hospitals, and other like buildings. Certainly no building containing valuable property or sheltering a mass of human lives should be without the protection afforded by an automatic sprinkler system.

ACKNOWLEDGMENT.—From an address before the Fire Marshals of North America.

It Makes a Difference Who Pays for the Leak

To the Editor of THE AMERICAN CITY:

The cartoon which THE AMERICAN CITY recently published, which was supposed to represent the attitude of the average flat-rate water consumer when there was a leaky faucet and his attitude after a meter was set, reminds me of a statement made in our office by a plumber who had been in business here for a great many years.

He stated that he had been doing work from time to time for a certain citizen of Terre Haute who bought his water at a fixed rate. The plumber had occasion to visit the citizen's residence to install new plumbing, etc., and he noticed that the water closet was leaking; he knew it to be a fact that the closet had been running for eighteen years. At different times, when doing other work, he had suggested that he repair the closet; but he was always advised not to do it, as the flow of water

thru the closet did not cost the citizen anything. In 1916, when we installed about 3,700 meters, which included installations in nearly all residences in the city, a meter was set on the premises where the closet had been running for eighteen years. The plumber stated that on the day when we set the meter he was called by telephone three times by the owner, urging him to come at once and stop the leak, with the statement that the water company had set a meter and he wanted the leak stopped.

I am glad to say that we are now 97.2 per cent metered, including every private fire protection line in the city. There are 218 flat-rate customers, each being supplied thru a single fixture.

DOW R. GWINN,
President and Manager, The Terre Haute
Water Works Co.
January 10, 1920.

A Unique Street Lighting System for Bridges and Narrow Roadways

The Use of Low-mounted Units on the Kensico Dam Roadway, New York City Water-Supply

A PUBLIC highway, carrying considerable automobile traffic, traverses the top of Kensico Dam, which impounds the 38-billion-gallon Kensico Reservoir of the New York City water-supply. The road approaches from the east over a three-arch masonry bridge across the near-by waste channel of the reservoir. Each terminal of the dam is surmounted by a circular pavilion of granite.

The part of the roadway crossing the top is approximately 2,200 feet long and 26 feet wide. At either end of the dam are located two pavilions surrounding a circular court. The roadway is brick paved and runs be-

15 inches deep, spaced approximately 37½ feet apart and located on both sides of the roadway with a staggered arrangement of spacing. The centers of the openings are 26½ inches above the surface of the roadway.

After the dam was completed, preliminary tests of various lighting equipments which were tried out indicated the necessity of the development of a special system of illumination which would require specially designed devices. It was recognized that the roadway could best be lighted by triangular sheets of light. It was further required that as near an approximation of even illu-



NIGHT VIEW OF KENSICO DAM ROADWAY LOOKING DOWN ON THE ROAD

tween cut stone parapets approximately 4 feet in height.

The architectural specifications for this dam would not permit the use of poles in connection with a lighting system of the roadway. It was therefore decided that the lighting should be provided from ports located in the side of the parapet wall. The designing architect conducted experiments with apparatus consisting of candles and boxes, and concluded therefrom that a lighting system could be developed for the roadway which would not require the use of poles. As a result, provisions were made by permanently locating recessed openings cut in the stone work. These openings were approximately 13½ inches square and

mination as possible be provided. There must not be objectionable glare, and the distribution of light must be such that the usual requirements of good street lighting be met as far as possible with the units located in these unusual positions. Lighting units designed to meet these requirements are perhaps best described by quoting from a copy of the original specifications which were drawn up after the preliminary investigations and tests.

The Accepted Lighting System

There is a cast metal frame of suitable size to fit the opening in the parapet wall, carrying a hinged door which is fitted for supporting the prismatic glass. This door



NIGHT VIEW OF KENSICO DAM LOOKING ALONG THE LEVEL OF THE ROADWAY, SHOWING THE UNIFORMITY OF ILLUMINATION

is provided with a lock and has four bars across the front for the purpose of protecting the glass. The dispersing glass in the door consists of one piece of sheet prism glass with the prisms placed vertically. The function of this glass is to give some diffusion and give additional spread to the beam of light so as to produce uniform illumination over the surface of the street.

The source of light consists of a 6-volt, 108-watt Mazda "C" headlight lamp. As these lamps operate at a very high efficiency and are designed for shorter life than is considered practicable for street lighting service, it was deemed desirable to operate them at a somewhat lower efficiency than rated. Consequently, power is supplied by means of individual transformers giving $5\frac{1}{2}$ volts. Operating at this voltage, the lamps will consume approximately 94 watts and give an average life commensurate with those designed for street lighting service.

There is a very wide spread of light in the horizontal plane, and, consequently, the illumination over the whole roadway and the parapet walls is comparatively uniform. A study of the vertical distribution shows

that the illumination falls off rapidly above the horizontal and that at the eye level of an automobile driver the intensity is comparatively low.

The night views reproduced herewith show the illumination results obtained, the former being taken looking along the level of the roadway, while the latter was taken at a considerable elevation.

A system such as described above may or may not be practical for the lighting of ordinary streets or roadways, depending upon conditions and requirements. However, the results obtained in this particular case are gratifying and may form a basis for other installations of similar requirements. The power consumption is not prohibitive (approximately 5.0 watts per running foot of roadway), the illumination is of sufficient uniformity, there are no poles to mar the architectural beauty of the structure, light is confined and distributed so as not to be objectionable from the standpoint of glare—all of which are factors that have considerable bearing in striving for the ideal of the illuminating engineer.

ACKNOWLEDGMENT.—From a paper by C. A. B. Halvorson and A. B. Oday, read at the annual convention of the Illuminating Engineering Society.

The well-lighted neighborhood needs less policing than the neighborhood where the lighting is deficient. The investment in street lighting is a good one when balanced against the police payroll.

Trees for the Streets of Cities and Towns

An Outline of Proper Methods of Planting and Cultivating

SIMPLE and practical information with which the idea of city beauty may be brought nearer realization is contained in a recently published bulletin, "Street Trees," prepared by a horticulturist of the United States Department of Agriculture. With very few exceptions, the tree growth of the streets of the average American town or city is ragged and unkempt. That of the suburb or small village is not much better unless it has been under adequate municipal control and the plantings on a given street have been confined to a single kind of tree. Those modern necessities, the telephone, telegraph, electric light, and trolley car, each have shared in the mutilation and destruction of good trees. Too few municipalities realize, however, that these facilities can be provided without impairing the beauty of shade trees. One means of preventing injury is the more general use of alleys for public utility wires.

Faulty pruning has also caused much deformity. It is to make plain the means for speedy improvement in the appearance of American streets that this bulletin has been prepared.

Put Street Tree Planting Under Civic Control

Trees on well-shaped thoroughfares are not only pleasing, but contribute to the health of the community by giving off moisture and producing effects restful to the eyes and nerves, as well as by affording shade from the midsummer sun. Many cities, proud of their progressiveness, but whose down-town districts are barren of shade, will be surprised to learn that the planting of trees in business sections is earnestly recommended in this bulletin. The fullest success in maintaining street trees can be attained only by planning and controlling the planting as a whole, by selecting suit-



A STREET IN STOCKTON, CALIF., WITH MIXED PLANTINGS PHOTOGRAPHED IN EARLY SUMMER

The trees are of different kinds, some unsuited for the purpose, planted at varying distances apart according to the inclination of property holders

able varieties, by setting out healthy specimens, and by planting and caring for each tree properly.

As American municipalities have increased in size, and hard pavements have supplanted earth roads, the conditions for tree growth have become increasingly severe. In large cities it is practically impossible for the average householder to grow street trees successfully at anything like moderate cost.

Put Street Trees Under City Control

Providing shade on city streets is as much a municipal function as providing lights or sidewalks, and therefore should be undertaken by public officials. Negative control by requiring permits for planting, pruning and removing is little better than no control. Probably the most satisfactory provision is thru an unpaid commission of three or five members—men who should be appointed to long terms, since it takes two or three years for a commissioner to realize the needs and scope of the work.

Even a good board charged with the care of street trees can accomplish little without liberal funds. These may be provided by appropriation from the general tax fund or by direct assessment against the property owners, collectible with their taxes. In any event, the minimum appropriation should be sufficient to carry on properly the work already begun.

Property Owners Should Pay for Planting

All things considered, it is probably desirable to assess the cost of tree planting against property owners on a frontage basis, while maintenance may be provided out of general funds. The town or city inaugurating a comprehensive street-tree program should secure help of someone who knows trees and local conditions, and who will carefully select a suitable kind of tree for each street or section of the city. Mixed planting of different sorts of trees is not pleasing. Where several varieties are already growing on a street, the problem, of course, is more difficult. If there is but one good variety and several poor ones well matured, the gaps that occur from death or disease may be replaced with suitable young trees. In many cases, however, it is preferable to cut out all the standing trees, particularly if most of them

are undesirable, and begin afresh, thereby securing beauty and uniformity.

Proper Spacing of Trees

An almost universal fault is to plant trees too near together. Furthermore, the removal of a fairly good tree, because short-lived or misplaced, usually meets with much popular opposition, tho such a change may be wise. It is extremely important that young trees should be planted farther apart than is commonly considered desirable. If one insists on setting out trees close together, specimens of a short-lived variety can be placed alternately with trees of a more desirable variety. Even in such cases the public usually is strongly opposed to the removal of the "fillers" at the time when the welfare of the better trees demands it, therefore it is unwise to take the chance of planting fillers.

A common practice is to set street trees 35 feet apart. If public opinion will permit the removal of one-half of the trees at the proper time, this is a good arrangement. In general, a better rule for the eastern half of the United States and for the Pacific Coast is to set trees 50 feet apart in the case of most varieties. For larger-growing trees, 60 or 70 feet is even better. The public's instinctive opposition to cutting down trees, mistaken as it frequently is, is but another indication of how much trees mean to man, and emphasizes the need for wise, far-sighted care of them.

Some of the more obvious difficulties with which a city tree has to contend are water-tight pavements, the removal of top soil in street paving, careless digging for public service utilities, saturation of the soil with gas from defective pipes, the pouring of salt water from ice cream freezers into gutters, the gnawing of trunks by horses, and the slashing of tops by linemen and tree trimmers. If it is impossible to grow trees on a street, that thorofare should not be used. This test, applied to many congested city districts, would find them sadly wanting.

A common mistake in young, growing cities, and in many older ones also, is to provide wider street pavement than is likely ever to be needed. By reducing the roadway and making the remainder into



AN OAK-SHADED STREET IN BIRMINGHAM, ALA., IN LATE SUMMER

parking spaces, much is added to the attractiveness and comfort of the city.

those whose worth has already been demonstrated.

Trees Suitable for City Streets

Compared with the whole number of trees used for horticultural planting, the number of kinds suitable for street planting is fairly small. A street tree must have a fairly abundant foliage that will withstand dust and smoke, a root system not easily affected by unusual soil conditions, by restricted feeding areas, or by root pruning resulting from street digging. The tops should be in proportion to the street's width. Narrow thoroughfares should be planted with columnar trees, such as Lombardy poplars, or in some cases with trees that do not attain great size. Broad streets may be planted with spreading trees.

As a rule, native trees that have been successfully grown in other cities should be given the preference in making selections. There are also many prominent native and introduced trees which have not been planted on a sufficient scale to demonstrate their value for street planting for any considerable area. The burr oak, swamp oak, scarlet oak, white oak, sour gum and others may be found on trial to be as valuable as

What Trees to Plant

For the region comprising the northeastern part of the country from eastern Illinois to the Atlantic Ocean, and extending southward thru the Appalachian Mountains, the best trees for street planting are the red and pin oaks, London plane, sycamore, the staminate form of the ginkgo, basswood, tulip, Norway maple, white ash, thornless honey locust, American elm, and in the southern portion of this region on light land the sweet gum. The red and sugar maples are among the best trees for suburban conditions. The hackberry will grow, but should be discarded in favor of better varieties. The mossy-cup and chestnut oaks are worthy of trial on gravelly soils in the suburbs.

The bulletin contains data regarding more than a score of different kinds of trees, stating the time in which they leaf, their geographic distribution, etc. This list includes many varieties of elms, oaks and other trees, as well as certain foreign trees, such as the ginkgo, a native of Japan that thrives on either a cool or a hot climate.

Culture of Trees

Nursery-grown trees should not be used for street planting. They should be transplanted at least every two years while in the nursery to insure a thoro root pruning and an abundance of fibrous roots close to the trunk. If woodland trees are wanted, most kinds should be grown for a few years in a nursery before being planted on a street. A tree should have a straight trunk with a good set of branches, the lower ones being 7 to 9 feet above the ground. Opinions differ as to the sizes to plant, but for average conditions trees 10 to 12 feet high with trunks 2 to 2½ inches in diameter are satisfactory for most street purposes. With elms and sycamores and some southern oaks, trees somewhat larger can be used, while in the regions of limited rainfall smaller trees are preferable.

Planting the Trees

An important detail in street planting is the preparation of the hole. From 2 to 3 cubic yards of top soil from land that has been producing good crops should be provided for each street, well enriched with rotted manure—one part of manure to four of soil. Eighteen square feet of opening in the pavement should be provided, especially if the latter is impervious to water. The soil should be from 2½ to 3 feet deep. If the soil in which the hole is dug is so impervious as to hold water, artificial drainage must be provided. Under no circumstances should the depth of available feeding ground be less than 2 feet. The deeper the roots can go, the less injury is likely to result from drought. If trees are to be shipped in from a distance and are not to be planted at once, they should be taken on arrival to some well-drained spot not too exposed, while the roots can be carefully covered or heeled in. In doing this the tops may be left erect or laid almost parallel to the ground. Not a moment of exposure to the roots should be permitted in transferring them to the soil. If the roots appear dry, they may be dipped in a tub of water or thin mud for a few minutes before heeling in. When taking trees out of this temporary protection, care should again be exercised to prevent exposure of roots to sun or wind. They should be kept closely covered with moist burlap or canvas until planted.

Fall or Spring Planting

In climates where newly planted trees may secure sufficient soil water to replace losses resulting from drying, fall planting is best. Where they secure insufficient moisture, it is better to plant only in the spring. Where the soil freezes to a level below the roots, a supply of water is cut off from the latter, and the tree may be killed because of the evaporation.

Soil that is too dry will show no tendency to cling to the roots when thrown about them during planting. In the case of such dryness it may be well to water the soil a day or two in advance; or if the excess of dryness does not make the soil difficult to handle, the tree may be planted and then thoroly watered. After watering, 3 or 4 inches of the loose soil should be spread over the wet ground to prevent undue evaporation. It should not be tramped or pounded in any way after the water is applied. If trees planted in moist, retentive soil are watered after planting, they should be provided with a mulch of similar earth. East of the Mississippi River, trees planted in soil that is in good condition do not need watering at the time of planting.

At planting time the tree should be so pruned as to remove half to three-fourths of the leaf buds. Specific directions with regard to pruning are difficult, because different species of trees differ materially in the character of their growth. In addition to pruning the tops, broken ends of roots should be removed with a clean, sharp knife, as new rootlets put out more readily from cleanly cut, fresh surfaces than from ragged breaks. Under certain conditions young trees usually need the support of a strong stake, and often some well-constructed guard to a height of 6 or 7 feet.

If, after planting, the season is dry, the ground should be soaked thoroly, and as soon as it has dried sufficiently it should be loosened up with a hoe or earth to make a good earth mulch. Young trees should be inspected annually, and all branches not placed to form a good head should be removed.

Care of Mature Trees

Proper care of mature trees involves a thoro understanding of tree growth. One can often reshape the top of a neglected tree to advantage, tho many mistakes are perpetrated by ignorant, but well-mean-

ing, trimmers. The removal of dead or undesirable limbs should be done by cutting them off at the crotch so that the wound is parallel with the remaining branch. The closer this cut is made to the remaining branch or trunk, the better. There should be no stubs left to harbor decay and prevent healing.

It is difficult to stimulate artificially the growth of street trees, because the uncovered area about the roots is generally small. Sometimes trees can be benefited by dissolving $\frac{1}{2}$ to 1 pound of nitrate of soda in 50 gallons of water and applying 1 to 25 gallons of the liquid at a time, the amount depending on the size of the tree. Unless this soil is damp, water should be applied immediately afterwards. This solution should be used only when the tree is in full leaf and growing.

Water, of course, is one of the great needs of city trees, as the ground is frequently covered with water-tight paving. Street trees are subject to attacks by insects, and several varieties have their destructive enemies and diseases. Hence every municipality needs the services of a trained man who is provided with an efficient spraying outfit. It is estimated that

95 per cent of the attacking insects can be killed by insecticides carefully applied with a machine that delivers a stream under high pressure. Details as to the names of insects and diseases to be looked for, methods of treatment and materials to be used, may be found in other Government publications, or by correspondence with the nearest state agricultural experiment station or with the United States Department of Agriculture.

Do Not Whitewash Trees

Whitewashing the trunks of trees is useless and unsightly—useless because it does not prevent the attack of insects, and unsightly, because it makes the trunks obtrusive when they should be inconspicuous. Bandaging with cotton or various preparations may occasionally be useful, but because such applications are so seldom helpful, and because some preparations result in injury to the trunks due to constriction, they should not be resorted to except upon recommendation of an expert.

EDITORIAL NOTE.—Copies of the bulletin referred to, entitled "Street Trees," may be had at the rate of 15 cents each by addressing the Superintendent of Documents, Government Printing Office, Washington, D. C.

Hogs Removed Garbage From Streets in Old New York

Dickens Described the Refuse Removal Methods of 1842

THE recent choked and shell-holed condition of the streets of New York has delayed many of the normal activities of city life which are ordinarily taken for granted. Since relief has come with the removal of most of the metallic-looking mountains which have lined the streets, the March winds are carrying high and low the dried and disintegrated refuse which remains.

The collection and disposal of all the waste that has accumulated in the streets while the collection wagons have been unable to make their rounds is a heavy task. But the method that was in vogue eighty

years ago will not be called into service. In those days hogs were turned loose in the streets to eat the garbage. These animals were not on the city pay-roll, but they were efficient. In "American Notes" Charles Dickens describes such scenes of 1842, when the hogs got their living by street-cleaning. Nowadays the hog is kept busy in the background, and the garbage is brought to him. Hog-feeding farms have been established by a number of municipalities, and an exchange of benefits is thus provided—the city gets rid of the garbage, the hogs turn it into pork, and the city or contractor makes a profit.

The Characteristics of Asphalt Sidewalks

Methods of Construction for City and Park Use

By **Walter E. Rosengarten**

Traffic Engineer, The Asphalt Association

THE foundation of a sidewalk, as in other structures, is a subject which requires careful attention. The subgrade should be well drained and firm. The bottom course, which in sidewalks and street pavements is essentially the load-carrying part of the structure, should be so designed that it will distribute the loads over a relatively large portion of the subgrade, and at the same time be able to dispose of water which might accumulate under the walk and cause heaving from frost action. Since the loads which sidewalks carry are not excessive, the question of frost action generally becomes the important one. It is for this reason that an asphalt sidewalk is advantageous. It is yielding and will not readily crack and disintegrate with slight movements, thus permitting a less expensive foundation than must be used for a rigid type of surface. A wide selection of materials can be successfully used for the foundation of an asphalt sidewalk; among them may be mentioned sand, gravel, broken stone, brick, concrete or cinders. The cinders should be steam or black cinders. Ashes as obtained

from households are not suitable. The foundation depth is dependent on the weight of loads from above and the character of the subsoil beneath. An average of 6 inches of cinders should be sufficient under ordinary conditions, 4 inches of gravel or broken stone, or 3 inches of concrete.

Upon the compacted foundation is laid the asphalt wearing surface, which might be a 1-inch course of sheet asphalt mixture having a dusting of cement brushed over the surface; where a cinder foundation is used, it will be found desirable to first lay an open binder course $\frac{3}{4}$ -inch in thickness. A mixture of asphalt and clean stone chips spread and rolled to a depth of 1 inch, with sand or pea gravel scattered over the top and rolled into the surface, also makes a desirable wearing course. A surface of asphalt tiles 8 inches by 8 inches square or hexagonal, and 1 inch to 2 inches thick, is sometimes used. These tiles are made by thoroly mixing crushed stone and hot asphaltic cement and then compressing this mix into a tile or brick. The tiles are laid on a sand-bed or directly upon the leveled foundation described above.



ASPHALT SIDEWALKS IN LINCOLN PARK, CHICAGO

Another type of surface is the asphalt macadam, which makes an excellent surface at a small cost. Upon the foundation course is spread and rolled a 1½-inch layer of broken stone passing a 1-inch screen. Hot asphaltic cement is then spread at the rate of about 1 gallon per square yard, which penetrates into the top course, filling the voids and binding together the stone particles. A covering of stone chips is applied and rolled into the surface. This is followed by a light seal coat of asphaltic cement and again covered with clean stone chips and well rolled.

Interesting data on the cost of resurfacing macadam walks with sheet asphalt have been tabulated for Lincoln Park, Chicago. In Lincoln Park proper there are about 50,000 square yards of walks built principally of cinders, limestone macadam, and gravel macadam. In 1913 the attention of the commissioners was drawn to the difficulty of keeping these walks in condition for foot travel. In wet weather pools of water would stand in the walks; in dry weather the protruding stones caused a great deal of discomfort to the pedestrians, thereby obliging many of them to walk on the grass; and in winter the removal of snow was unnecessarily difficult.

In deciding upon what methods to use to eliminate the above difficulties, the following considerations were borne in mind: (1) low first cost and low maintenance; (2) the walks should be in harmony with the park surroundings; (3) the utilization of the foundations of the walks as they stood; (4) the walks should be of such a nature as to induce people to use them, rather than the grass. With these considerations in view, the choice was narrowed down to building Portland cement concrete walks or resurfacing with an asphaltic mixture. It was finally decided to build some experimental sections with an asphaltic top. These experiments proved so successful that enough money was appropriated to cover nearly 40,000 square yards of walks with an asphaltic wearing surface. About one-third the area, or 13,329 square yards of walk, were sufficiently compact and rough to pave with a wearing surface only. The remainder, or 26,657 square yards, required a binder and top. The binder used was composed of ⅓- to ¾-inch stone and asphalt. A number of tests showed that the percentage of asphalt used, by weight, was

as follows: minimum 3.85, maximum 5.15, average 5.25 per cent. The binder was laid so that it was ¾-inch thick after being rolled with a 5-ton roller. The wearing surface mix consisted of asphalt, limestone screenings, stone dust and bank sand in the following proportions:

	Per Cent
Asphalt	10.50
Passing 200-mesh.....	12.50
Passing 80-mesh.....	18.00
Passing 40-mesh.....	36.00
Passing 10-mesh.....	13.00
Retained on 10-mesh.....	10.00
	<hr/> 100.00

The wearing surface was laid ¾-inch thick after being rolled with a 5-ton roller. Immediately after rolling, Portland cement was brushed over the surface and then rolled with the 5-ton roller. The cement fills the minute voids in the surface and also improves the appearance of the walks. From the cost report it can be seen that asphalt walks were laid at approximately 60 per cent of the cost of concrete walks where both binder and top were used, and at about 35 per cent of the cost of concrete where a wearing surface only is used.

Labor	\$0.107
Material	0.209
Teams	0.010
Overhead charges	0.024

Total cost per square yard.... \$0.350

George T. Donoghue, Chief Engineer for the Lincoln Park Commission, Chicago, stated in October, 1919, that "the walks have given complete satisfaction despite the fact that they have been subject to much heavier traffic than was originally intended. For two seasons a pleasure device consisting of a tractor carrying trailers of three coaches, each coach with a capacity of 12 passengers, ran over these walks. In addition, trimming trucks for electric light work and pick-up trucks used to gather leaves, paper, etc., have traversed the walks daily. We have not had occasion to spend more than \$300 in maintenance since the walks were first built in 1913 and 1914. At the present time we have had over 70,000 square yards of walks with an asphaltic wearing surface."

The cost of constructing asphaltic side-walks will often be found to be from 25 to 50 per cent less than the cost of cement and brick walks. This, when considered that they are not slippery, easily repaired, shock absorbing and pleasant to walk upon, easily cleaned, not porous, smooth and without joints, should make them very popular.

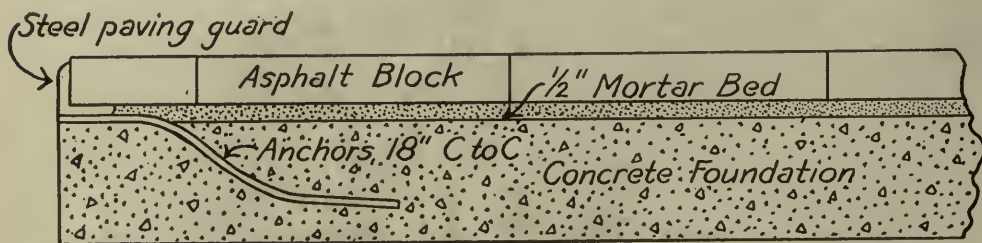


THE PORTION OF THE BRONX RIVER PARKWAY WHERE STEEL PAVING GUARDS WERE USED

Use of Steel Paving Guard on Parkway Drive

IN 1917 the Bronx Parkway Commission of New York paved a section of the Parkway Drive within the Bronx River Parkway Reservation, extending from the Botanical Gardens, Bronx Park, to Bronx Boulevard, Williamsbridge, a distance of about 1,500 linear feet. The driveway was 32 feet wide and was paved with 2-inch asphalt block laid on a concrete foundation and held between concrete flush curbs 6 inches in width, making a total width for the driveway of 33 feet. One hundred sixty feet of International steel paving guards were used instead of flush curb, and 40 feet were used as a header

at the northerly line of the Botanical Gardens, where there is a joint between the asphalt block pavement of the drive and the bituminous macadam pavement within the Botanical Gardens. This paving guard consisted of 10-foot lengths of $2\frac{1}{4} \times 2\frac{1}{4}$ -inch angle iron with steel anchors 18 inches apart extending into the concrete foundation. In placing these angles, they were nailed to the back of the form for the concrete pavement foundation. As concrete curbing was used in the sections of the driveway immediately preceding and following the steel guard portion, it was necessary to use asphalt blocks as fillers of



SECTION OF PARKWAY PAVEMENT SHOWING FOUNDATION, SURFACE AND STEEL PAVING GUARD

the corresponding space inside the angle guards, as shown in the sketch.

Advantages of steel paving guard:

Cannot be worn off by horses' hoofs and iron tires. (This is not, however, an advantage on the Parkway Drive, on which commercial traffic is prohibited.)

Allows entire surface pavement to be of uniform material and color.

Disadvantages:

Increased cost.

Little, if any, saving in labor.

Probably would not make good alignment on curves.

Costs in 1917:

The steel guard cost 26 cents per foot, plus freight. The cost of asphalt block to replace concrete flush curb was 9 cents per foot, making a cost of 37 cents per lineal foot for the steel guard and asphalt block. The cost of concrete flush curb 2½ inches high, which was laid at the same rate as the pavement foundation, was figured at 11 cents per foot, making a net increase in cost of 24 cents per foot on one side, or 48 cents for both sides of the driveway.

Excess Condemnation as an Aid in City Improvement

Rapid growth and new traffic problems of large cities have in recent years developed an absolute need for comprehensive city planning which involves knowledge of existing conditions and study of the future growth, covering the proper relation of improved thoroughfares, boulevards, parks and recreation grounds. In securing such improvements thru condemnation, the courts do not permit the taking of more land than is shown to be actually needed. This often results in leaving remnants of abutting parcels of land which are inadequate for proper building utilization, for which owners have been awarded damages to full value. With the right of excess condemnation the city would acquire sufficient abutting land to provide properly shaped building lots. These would be sold or leased, with suitable restrictions, if required, to protect the improvement, and the

city would derive the benefit of enhanced values resulting from the development.

Protection of thoroughfares, parks and public building sites from unsightly structures or neglected vacant remnants of land is one object of excess condemnation. Another is recoupment to the city for cost of improvements thru sale of excess land. It can be readily understood that many public improvements could thus be secured at little or no cost, and some improvements might be realized which without excess condemnation would be impracticable because of excessive cost. Past mistakes of street widths and locations made thru bad platting can in some instances be corrected with the aid of excess condemnation. In such cases the city could acquire the land affected and replat it to conform to the general city plan.—The City Plan Commission, Detroit, Mich.

On the Calendar of Conventions

MARCH 26-27.—BELLINGHAM, WASH.

Washington Association of Commercial Organization Secretaries. Semi-annual convention. Secretary, A. F. Marsh, Chehalis, Wash.

APRIL 7-10.—NEW YORK CITY.

American Physical Education Association. Annual convention. Secretary, Dr. J. H. McCurdy, 93 Westford Avenue, Springfield, Mass.

APRIL 7-10.—NEW YORK CITY.

Recreation Superintendents' Association. Annual convention. Secretary, Joseph J. McCaffrey, City Hall, Providence, R. I.

APRIL 12-17.—HOT SPRINGS, ARK.

United States Good Roads Association. Annual convention. Secretary, J. A. Rountree, Birmingham, Ala.

APRIL 14.—NEW ORLEANS, LA.

National Child Labor Committee. Annual meeting. General Secretary, Owen R. Lovejoy, 105 East Twenty-second Street, New York City.

APRIL 14-21.—NEW ORLEANS, LA.

National Conference of Social Work. Annual meeting. General Secretary, William T. Cross, 315 Plymouth Court, Chicago, Ill.

APRIL 19-21.—CINCINNATI, OHIO.

National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 60 State Street, Boston, Mass.

APRIL 27-29.—ATLANTIC CITY, N. J.

Chamber of Commerce of the United States of America. Annual meeting. General Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

MAY 4-6.—CHICAGO, ILL.

National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 87 Milk Street, Boston, Mass.

MAY 5-7.—WASHINGTON, D. C.

American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

MAY 10-11.—ST. LOUIS, MO.

American Association of Engineers. Annual convention. Secretary, C. E. Drayer, 63 East Adams Street, Chicago, Ill.

MAY 18-21.—PASADENA, CALIF.

National Electric Light Association. Annual convention. Acting Secretary, S. A. Sewall, 29 West Thirty-ninth Street, New York City.

MAY 19-21.—ATLANTA, GA.

Tri-State Water and Light Association of the Carolinas and Georgia. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

JUNE 21-26.—MONTREAL, QUE.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West Seventy-first Street, New York City.

The Motor Truck Serves All Municipal Departments



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This illustration shows one 75-foot aerial with ladder-nozzle equipment, three triple-combination pumpers of 750-gallon capacity, and one squad car with a 35-gallon chemical tank, 300 feet of $2\frac{1}{4}$ -inch hose, rubber covers, smoke helmets, life-saving equipment, and a crew of ten men. All the apparatus is of American-LaFrance make. In addition there is one Reo 1-ton truck with 800 feet of $2\frac{1}{4}$ -inch hose, and other minor equipment, one McLaughlin supply car, and one McLaughlin chief's car, which make up the motor section of this fire department. The photograph was taken in front of the municipal buildings.



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In many cases only one wheel will mire in the mud. By taking the weight off this part of the truck it can be easily pulled out. This can be done by shifting the load on the truck, putting a jack under the frame, or by getting a few husky men to lift on the corner that has been mired. Each truck should carry a tow line. The momentum of the truck will often carry you thru a bad stretch. Before starting thru such roads put your shifting lever in low gear. To stop in a mud-hole to change gear means only to stay there indefinitely. There is only one surety, however, of pulling thru bad stretches of road: install chains beforehand and avoid getting stuck and laboring under hard conditions to get out.



MOTOR SPRINKLER-FLUSHER AND SIDEWALK CLEANER UNIT MOUNTED ON A MACK TRUCK OWNED AND USED BY THE CITY OF RICHMOND, VA.

What Chambers of Commerce and Realtors Can Do to Help Abate the Billboard Nuisance

By Everett L. Millard

President, Municipal Art League of Chicago

ONE of our large American cities has already reaped the fruit of the new legal situation in regard to billboards resulting from the most recent decisions, and has actually accomplished their regulation and prohibition. The city of Los Angeles has divided the city into business and residence districts, permitting billboards in the former and prohibiting them in the latter zone.

The advertising billboard is now recognized as one of the leading nuisances in the home life of our cities, and to a less extent in our rural communities. In this, of course, I am not referring to small signs which advertise a business conducted on the premises, or real estate "For Sale" and "For Rent" signs, which, so far as I know, have not been attacked in any ordinance, except as their size has been limited to a reasonable degree. The billboards meant are those large purveyors of information to an unwilling public as to goods for sale, which line so many of our city streets and which form such magnificent avenues of approach along the boulevards and railroad tracks to Atlantic City.

The Effect of Billboards on Real Estate Values

It is not an esthetic question only which interests us, altho from a dollars-and-cents point of view no one any longer sneers at the profit to a community in the beautification of its physical appearance. Least of all will such a group as the real estate men fail to appreciate the value of making their communities attractive to visitors; they know that a modern and handsome city pays, and that the beauty of the streets largely determines not only the satisfaction of its residents in living there, but the desire of other people to visit it.

Clippings from all over the country show the continually increasing protest against the defacement of streets and roadways for selfish interests, and real estate men in par-

ticular have such a strong interest in the matter, and their influence is so powerful in the communities in which they reside, that they are capable of forming and making effective public opinion.

I recall a resolution passed by the Indiana Real Estate Association a couple of years ago in Indianapolis, wherein the billboard was declared to be a nuisance, especially in our cities, where its unsightliness affects real estate values and net returns, and detracts heavily from the value to the people of the city's investments in parks and boulevards.

Unfortunately, however, the law of the land is apt to be so conservative that it falls behind the advance of public opinion, and for a number of years it held up efforts to abate billboards. Esthetics are not recognized in general by the courts, altho there would seem to be no good reason why offenses to the eye should not be recognized, as well as offences to the ear and nose. The defacement of our streets has frequently been held to be outside of the regulatory powers of municipalities, where the only complaint is on the ground of appearance.

I think that in time the courts will advance to keep pace with public opinion. The regulation of boards for artistic reasons is not, in my opinion, an interference with private property, but is a regulation of the use of streets and highways, for there is no question that a view of the boards from the streets is what is contemplated and what is necessary to the use of the boards, and that no boards would be erected if it were not for their effect, or supposed effect, on the passer-by. The President of the Board of Commissioners for the District of Columbia told me that they prohibited boards under any circumstances in that city boldly on the theory that it was for the public welfare, and court decisions indicate that the suppression of ugly structures, even on private property, whose only



A PORTION OF THE BILLBOARDS FORMERLY IN THE BRONX RIVER PARKWAY RESERVATION
NEAR WILLIAMSBRIDGE, NEW YORK CITY

The Bronx Valley for five miles was outraged by these nuisances. The signs faced a railroad and a popular motoring road

object is to affect the passers-by in the highways, will more and more be deemed to be an element of public welfare.

Court Decisions Regarding Billboards

We now have the authority of the courts behind us on a perfectly sound legal basis, for regulating and prohibiting boards under the police power, where there are practical objections to them. These practical objections must be made clear to the court, to show that an ordinance is reasonable, if it is contested. Some years ago the city of St. Louis made a great advance in billboard protection by passing an ordinance which laid down definite rules for the safety of construction of such boards, defining their location on lots, and requiring them to be built free from other structures, so as to minimize the fire risk, as well as requiring a clear space under them, to lessen the danger of their becoming a nuisance. This ordinance was attacked and sustained, in a vigorous opinion. The next step was that taken by the city of Chicago, in an ordinance passed in 1911, wherein signs on roofs of buildings were prohibited and majority consents were required for construction of boards in residence districts. The roof prohibition has never been attacked, but the consent requirement in residence districts, when it was finally enforced by the city of Chicago, was contested by the billboard companies. The Supreme Court of Illinois upheld the right, and this decision was affirmed in 1917 in the case of *Cusack vs. City of Chicago* (242 U. S.

426).*

This decision is of the greatest importance, in that it holds constitutional an enactment absolutely forbidding billboards in residence districts. Such a right of prohibition follows upon the right to require frontage consents, because an ordinance could not allow property owners to consent to the erection of billboards by majority action if it could not absolutely prohibit the boards, a right to which the majority consents are simply a waiver.

The decision is based on evidence introduced in the lower court, which is summarized in the following quotation from the Supreme Court of the United States:

"Upon the question of the reasonableness of the ordinance, much evidence was introduced upon the trial of the case, from which the Supreme Court finds that fires had been started in the accumulation of combustible material which gathered about such billboards; that offensive and insanitary accumulations are habitually found about them, and that they afford a convenient concealment and shield for immoral practices, and for loiterers and criminals. As bearing upon the limitation of the requirement of the section to blocks used exclusively for residence purposes, the Court finds that the trial court erroneously refused to allow testimony to be introduced tending to show that residence sections of the city did not have as full police or fire protection as other sections have, and that the streets of such sections are more frequented by unprotected women and children than, and are not so well lighted as, other sections of the city are, and that most of the crimes against women and children are offenses against their persons.

"Neglecting the testimony which was ex-

* See THE AMERICAN CITY, March, 1917, p. 281.



Photographs by courtesy of the Municipal Art Society of New York

THE SAME AREA SHOWN ON THE PRECEDING PAGE, AFTER THE ACQUISITION OF LANDS AND THE REMOVAL OF SIGNS BY THE BRONX RIVER PARKWAY COMMISSION

Relief is afforded the traveller, whether suburbanite or pleasure-seeker, and the neighborhood's self-respect is restored

cluded by the trial court, there remains sufficient to convincingly show the propriety of putting billboards, as distinguished from buildings and fences, in a class by themselves, and to justify the prohibition against their erection in residence districts in the interest of the safety, morality, health and decency of the community."

The full fruit of the Cusack decision has not been taken advantage of by the city of Chicago, in that the city has not yet absolutely prohibited boards in residence districts, and the administration is, to say the least, not vigorous in enforcing the ordinance as it stands. Los Angeles, however, and some small communities that I know of, have employed it in prohibiting boards in their residence sections.

Organize Public Opinion

I am not suggesting an effort at present to secure a more adequate legal recognition of the right of the people to a city beautiful. I am not suggesting common action in remonstrating with advertisers, which has its uses, but which is too difficult an effort to sustain. I am not suggesting work for higher taxation of boards, altho that will bear consideration.

The immediate suggestion is that city officials, real estate men, and members of chambers of commerce directly organize

public opinion for the benefit of the community and for themselves, and draft regulatory ordinances strictly prescribing the physical construction and regulation of boards, prohibiting them on the roofs of buildings and particularly in residence districts and vacant lands in such districts. Such laws and ordinances properly drawn to take advantage of the state of facts existing in the community, as illustrated in the Cusack case, can be brought before city councils with the backing of progressive aldermen or commissioners, and the united real estate boards and chambers of commerce behind them.

Public opinion is ripe for leadership, and city officials will find that they are on popular ground in securing such enactments. The practical and political interest of such men must be secured to accomplish results, but all good civic and industrial organizations in such a city as Chicago have been found willing to favor prohibition of boards in residence districts. If these bodies will draft such an ordinance, it will not be found difficult to secure an expression of united public approval. Broadly speaking, only people pecuniarily interested in billboards will object to their strict prohibition, and the general public are surprisingly in favor of it, altho they may not always be articulate.

Effect of Car Tracks Upon Traffic Capacity of Roadways

By George W. Tillson
Consul ing Engineer, La Grange, Ill.

THERE is probably no other one thing that is the source of so much trouble and annoyance to the official in charge of the maintenance of street pavements or road surfaces as the existence of street car tracks in those surfaces. This is mainly true because he frequently has no direct control over the repairs required to keep the tracks in good condition. As a general rule, the street car companies must keep in good repair the tracks and the pavement between them, and also a narrow width outside. It is generally provided that, if the corporation does not do this, it may be done by the municipal authorities. But so much red tape is involved in carrying out the legal requirements of collecting the cost of repairs from the company, that the provision is seldom resorted to, and it is generally considered better policy to try to have the necessary work done by the corporation itself.

Transportation is a very important factor in any city or state, and it does not seem quite proper that existing routes of travel should be made use of for street car tracks. Street car lines, especially if suburban, should secure their own rights of way. This may be true as an abstract proposition, but it should be remembered that such procedure involves a considerable increase in capital cost and correspondingly reduces the dividend to be paid from a certain fixed fare. This is exceedingly important at the present time, when so many street car companies, both urban and interurban, are finding it impossible to meet their financial requirements with their franchise rates of fares.

The fact that tracks are laid in streets does not mean that they may be laid at any place or in any way that the company sees fit, without regard to public rights or needs.

Principal Considerations in Location of Tracks

The principal items to be considered are: the location of the tracks; their detailed

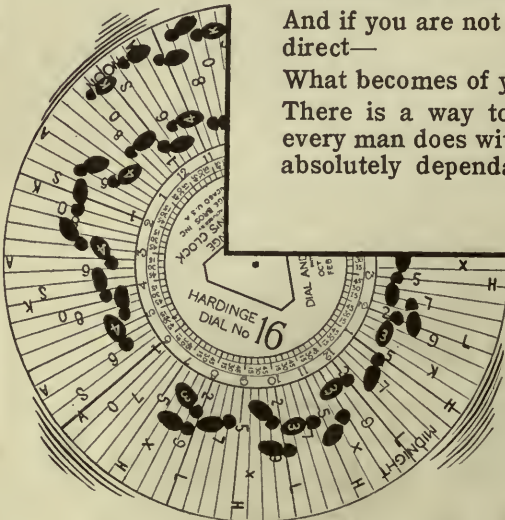
construction; the degree of maintenance; the character and amount of traffic on the tracks; and the character and amount of traffic on the street or road. The question of location is perhaps the most important. Its discussion involves the problem of the best location for car tracks when they must be laid within the lines of streets or roads. The common practice with streets is to place them in the center, thus giving an opportunity for streams of traffic to move in either direction entirely independent of each other. With this arrangement it can easily be seen that the width between the cars and the curb will have much to do with the effect on traffic. In the boro of Brooklyn, New York City, many streets with roadways only 30 to 34 feet wide have two lines of car tracks. In such cases the obstruction to traffic is very great, as the distance from track to curb is only $7\frac{1}{2}$ and $9\frac{1}{2}$ feet respectively, and even these distances are reduced by the overhang of the car itself. It is on streets like these that the items of construction, maintenance, amount of traffic, etc., are particularly important.

The author has always felt that a car track should be so constructed in a pavement that vehicular traffic could pass over it diagonally, squarely or in any other direction without any real inconvenience, and that it should be so maintained that it would always meet this requirement. The heavy truck traffic that is constantly increasing emphasizes this idea. With the present standard rails and latest construction there is no difficulty in accomplishing this. Practically all electric roads in streets or highways are operated by overhead trolleys, but in the boro of Manhattan, New York City, where the underground trolley is used, it is necessary to have the slot half-way between the rails of each track. This is also true of cable roads. Such construction makes it very difficult to properly lay or maintain the pavement. The space between the slot and the rail is so narrow and so shallow over the conduit that carries the



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power that ordinary pavement methods are not successful. With the same amount of care in construction and maintenance such tracks are more of an obstruction to traffic than those used with the overhead trolleys. The author has seen in Brussels and in Vienna an underground trolley system where the slot was built in connection with one of the rails, leaving the entire space between the rails unbroken. This seemed much better work from a pavement standpoint, but the engineer in charge of the railways of Vienna said it was not good for operation.

The Board of Estimate of New York has made a rule that a double-track road shall not be laid in a street with a roadway of less than 40 feet. In Philadelphia, where the streets are narrow, generally but one track is laid in a roadway, the cars necessarily having different routes to and from the center of the city.

In some cases where tracks are laid in the center, an area is curbed especially for the tracks; vehicular crossings take place only at cross-streets or other especially provided places. This is true in a few other cities, but almost generally so in New Orleans. There the streets as a rule are wide, allowing plenty of room for the tracks as well as for the general traffic of the city. In such cases, of course, traffic is not impeded at all except as to general crossing from one side of the street to the other.

Rochester, N. Y., has one or two streets where the tracks are located just inside the curb line. On one of the streets leading out of Paris the author has seen a similar location. In Rochester the instance noted was on a distinctly residential street, but in Paris it was in a small retail section. With such a location the general street traffic would not be affected, but it has always seemed to the writer that it must be very inconvenient to the people along the line, especially if it was on a business street. Here, however, again comes in the question of how much traffic the car line carries and how often the cars run.

Perhaps the best example of obstruction to traffic by car tracks of which the writer has any cognizance is in the boro of Manhattan, New York City. Central Park West is that portion of Eighth Avenue lying directly west of Central Park. This avenue south of 58th Street is 100 feet wide, with a

60-foot roadway with car tracks in the center. Central Park West is also 100 feet wide, but the roadway is only 48 feet wide and the tracks are laid on the easterly side, the nearest rail being 3 feet from the curb, leaving a free roadway of 29.9 feet, not taking into account the overhang of the car.

Central Park West is built up on the west side with business houses on its southern end, and the remainder with large apartment houses. The cross-streets, too, are well built up, so that the local traffic is heavy. Previous to the introduction of the automobile the obstruction to travel was not so great. But it can easily be seen that where it is necessary for all pedestrians to cross two lines of vehicular traffic in order to take or leave a car a great deal of trouble must occur.

So many accidents occurred that in 1913 the Board of Estimate and Apportionment passed a resolution directing the railway company to relocate the easterly track at its own expense, with the intention of widening the roadway after this was done. It seems, however, that the tracks were located in their present position in 1897 at the request of the Park Commissioner of the city, and the Corporation Counsel advised that a court seeking to do equity might well deny the application to compel the company to again relocate its tracks entirely at its own expense. The estimated cost of the work was \$352,000. Many communications passed between the city and the railway company in regard to the matter, but no physical work was ever done, and the tracks and roadway still remain as herein described. The police report shows that on this street 286 accidents occurred during the years 1910 to 1913 inclusive. In addition to the accidents to persons, the police records show that in 1913 there were 36 collisions between vehicles and 8 collisions between vehicles and surface cars. It is also stated that probably only the most serious vehicle collisions are included in the police records. No doubt the number of accidents has increased in subsequent years.

In any event, Central Park West has recently been made a one-way street so as to reduce the number of accidents to a minimum. In order to understand just what this means, it must be remembered that Central Park extends in width from Fifth Avenue to Eighth Avenue, a distance of half a mile,

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and that by making Central Park West a street for south-bound traffic only, this distance is increased by one long block, so that all north-bound traffic is cut off between Fifth and Columbus (old 9th) Avenues. This, of course, increases the congestion on all north-and-south avenues. North-bound automobile pleasure traffic, altho permitted to go thru Central Park, has but two outlets to the west, so that if not thru-traffic it must be seriously inconvenienced.

Compare for a moment the situation on Fifth Avenue south of 59th Street. This street is also 100 feet wide, and prior to 1908 had a roadway of 40 feet with sidewalk spaces 30 feet wide; but areas and stoops were allowed to encroach 15 feet, so that the free width of the street was only 70 feet. The Board of Estimate and Apportionment by resolution widened the roadway by setting the curb back $7\frac{1}{2}$ feet on each side, and ordered the encroachments back to within $2\frac{1}{2}$ feet from the property line, thus giving a roadway 55 feet in width with sidewalks 20 feet wide free from obstruction. The old roadway permitted four lines of traffic, and the additional 15 feet in width furnished space for two more, but even this is insufficient for the traffic requirements.

The large cars of the Brooklyn Rapid Transit Company when passing occupy practically 19 feet of space—18.6 feet, to be exact. Suppose a double-track line were laid in the center of Fifth Avenue, with the traffic it would certainly have when two cars met, there would be left on each side a distance of 18 feet, sufficient for only two lines of travel; in other words, nearly all of the benefits of widening would be lost.

Prospect Park, Brooklyn, has five sides, and on all the adjacent streets there are car tracks. With one exception the location is similar to that on Central Park West. But on only one street, Prospect Park West, has it been necessary to establish one-way traffic. This is because both the local street car traffic—passenger as well as vehicular—is light. During the summer many of the passengers carried by the car lines have the park itself as an objective, and they, of course, are benefited by having the tracks adjacent to the curb. The situation as a whole, however, well illustrates the bearing of both kinds of traffic upon the subject under consideration.

In another, but perhaps indirect, way it

can be shown how traffic is diverted on street car streets, and that is by its effect upon the pavements. In the boro of Brooklyn careful records have been kept of the cost of repairs to all pavements for more than fifteen years, by individual streets.

The cost of repairs to asphalt pavements on streets without car tracks for the years 1914 to 1918 inclusive has averaged 2 cents per square yard, and for streets with car tracks the cost has been $3\frac{4}{10}$ cents. While these figures prove nothing directly, they are at least indicative, as they give results upon 31,645,000 and 3,884,000 square yards of pavement on streets without and with car tracks, respectively.

The Problem in Suburban Communities

The problem of track location on roads is somewhat different from that on streets, because of dissimilar local conditions. Then, too, a country road, even if paved, seldom has its pavement of greater width than will accommodate expected vehicular traffic, so that any interference with existing pavement will be serious. Fortunately, however, there are generally no very serious objections to a side location, the tracks being sufficiently far apart to provide for ample width of the pavement between them. The new national highway bill proposes, where feasible, a 66-foot width of right of way and a pavement width of not less than 20 feet. This would give ample room for car tracks on both sides of the pavement. Whenever a wider roadway is required or any special local conditions arise, each case must be considered on its individual merits.

Effect of Type of Rail and Construction on Traffic]

If the tracks are located in the pavement, whether on a city street or a country road, the shape of rail and method of construction become very important. As has been previously stated, the mere existence of tracks in a pavement should not interfere with traffic. As a matter of fact, they do.

No doubt the well-known T rail of the steam roads is the most economical type of rail for traffic. It does not, however, permit a smooth junction between the pavement and the rail, either between the tracks or outside. This type of rail is also liable to cause ruts alongside the rail if the tracks are much used by vehicles. With the pres-

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ent grooved rail in use in most cities, which has a practically square edge on the outside and the flat lip on the inside, it is perfectly practicable to construct a track that *per se* will not interfere with traffic, especially if a 60-foot rail be used. Specially burned brick or specially cut stone blocks are sometimes used in connection with the T rail, the groove being really cut out of the blocks. This method often produces good results. On the country road, where the tracks are laid outside of the pavement, the T rail can, of course, be used to advantage.

But whatever the style of construction, it should be designed with the idea of keeping both the track and the pavement in good condition. Unfortunately, the track area of pavements in American city streets is not generally in good condition. Much improvement, however, has taken place during the last twenty years, and most street railroad companies realize that it is good policy to keep their plants well maintained. Again, unfortunately, soon after this realization the world war came on, bringing with it financial changes to all, but injuring street car companies perhaps more than almost any other corporations, bound, as most of them are, by franchise obligations as to permissible fares, with mounting costs of labor and materials.

If, then, car tracks are to exist in paved streets or roadways, they should be so constructed as to present as little interference as possible with the pavement. The most important item in construction is the type of rail to be used, and this has previously been discussed. The roadbed and foundation must be specially prepared. The rail must not give appreciably under car traffic, as it is almost impossible to maintain any pavement against a rail that moves vertically under the passage of cars. The joints are a prolific cause of trouble. Many times a hole in a pavement along the track has its origin at a defective joint. The use in the last few years of a 60-foot rail has helped this situation very much. Admitting the force of the arguments used herein, it follows that street car tracks do obstruct

traffic very materially when in use in streets or roadways.

The extent of this obstruction depends upon the amount of existing traffic and location of tracks, being greatest where both tracks and roadway are used to their utmost capacity and the tracks are laid in the pavement, and almost nil where traffic is light and the tracks are located outside of the pavement proper. Probably no better illustration of the relative traffic capacity of street-car and non-street-car streets can be given than existing conditions on Jackson Boulevard and either Adams or Madison Streets in the loop district of Chicago in the rush hours.

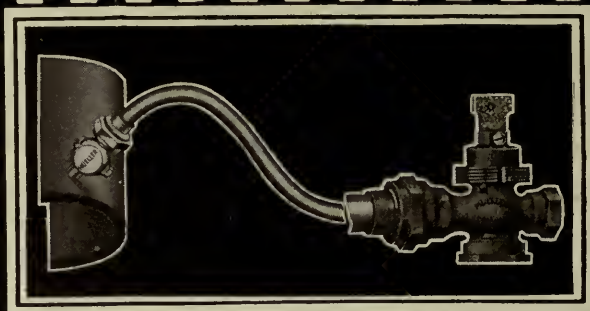
The Proper Location of Street Car Tracks

In designing a street or road where provision must be made for street car lines, a study must be made of both street car and vehicular traffic, present and prospective, so that the relative importance of each may be determined. As a general proposition, the center of a paved street will be the correct location, but often special conditions may make a different one desirable. In the same way it might be said that on a country road the side location would be most logical, possibly changing somewhat when passing thru small towns or villages.

Wherever the location, the type of construction should be good, variations being permitted according to exact locations and character and amount of traffic.

As careful provision should be made for the maintenance of the tracks and pavement to be kept in repair by the street car company, if any, as for the roadway pavement itself. If a new franchise is to be issued, the car company should be obligated to pay a specified amount, with the understanding that the highway authorities would keep the pavement in repair. The maintenance of the tracks and roadbed must be left to the operating company.

The author feels, therefore, that while some traffic obstruction must exist, if these precautions are taken the obstruction will be reduced to a minimum.



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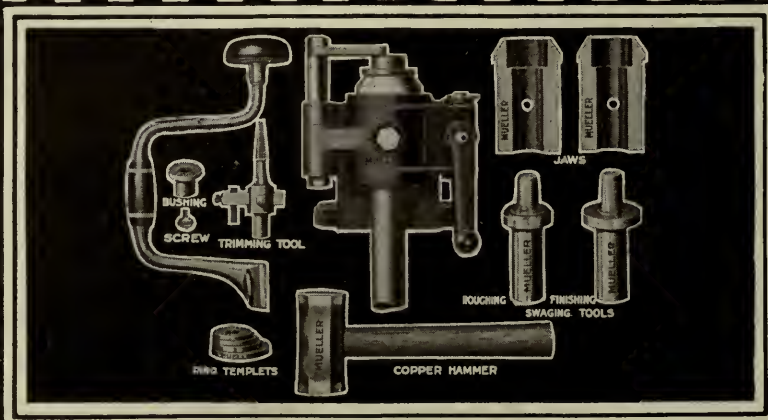
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Participating Franchises for Public Utilities

By Gaylord C. Cummin

Former City Engineer, Dayton, Ohio; Former City Manager, Jackson, Mich., and Grand Rapids, Mich.

Who Is to Blame? When

The Public

In a city of about 200,000, after the State Public Utility Commission makes an investigation and, together with the War Labor Board, recommends an increased street railway fare, lays such recommendations on the table without reading and denies the company even a hearing?

In states and cities forms organizations to fight all rate increases whether justified or not?

In a city of 30,000, where proposed rate increase is recommended by an arbitration committee a competent auditor and a competent utility expert all representing the city, takes no action except to attempt to annul the utilities charter, in twenty months driving the utility into bankruptcy?

Refuses a justifiable raise in gas rates due to tremendously increased costs, where gas rates are fixed by franchise and electric rates are not, altho both are owned by the same company?

The Utility

Asks for a change in franchise rates due to increased costs and at the same time refuses to consent to the change of terms in a contract for the use of a viaduct which will cost more than originally contemplated on account of the same causes?

Reports one percentage of earnings to the public in a rate case and another and higher rate to their bankers?

Hires those politically prominent but not expert in rate questions, to represent it before utility commissions and legislative bodies?

Whereupon the latter raises electric rates arbitrarily to make up the loss on gas by taxing unjustly the electric consumer.

PRESENT methods of control and regulation of public utilities are not giving sufficient relief or protection either to the public or to the investor. We need the utilities and we need good service at a fair price. For the interests of all, a permanent solution should be found as promptly as possible.

Two general solutions suggest themselves. The first, public ownership and operation, will not be discussed here, because the public is apparently not ready to undertake such operations on a large scale, no matter what the advantages or disadvantages of such a plan may be. The second method is private ownership and operation with public control, which will keep alive a spirit of coöperation and confidence by insuring reciprocal profits.

Service Most Essential

The public is interested primarily in service, at rates as low as are consistent with the service desired. The utility must have such compensation as will reward it for risks taken, and enough return on the in-

vestment to attract capital. The more safeguards that can be devised to protect the investment, the lower the rate of return that will attract capital. It must have freedom from unfair, burdensome restrictions and from political interference.

A satisfactory permanent agreement must provide for adequate service, rates fair to both parties, an incentive to the utility to increase its efficiency and lower its costs, and an incentive to the public to aid instead of hinder the utility in performing its functions. There should be provision to make the rates reflect actual conditions as nearly automatically as possible, so as to eliminate disputes over rates. Adequate and accurate arrangements for securing information as to actual operating conditions must be made by providing public control of methods of accounting, and an annual or continuous public audit. There should also be public control of additions and betterments, with power to veto as well as order, and public control over the issue of securities. Methods of arbitration should be included for taking care of any disputes which arise.

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What Such Franchises Involve

With these principles in mind, a solution is offered in the form of what might be called a "participating franchise," embodying the principles of the so-called "London sliding scale" as used in England and in the control of the price of gas in Boston, with some changes which are believed to be important in reaching the public mind.

The rate section of this provides briefly for the fixing of a "base rate" calculated to give the utility with reasonably efficient operation a return upon its investment which will attract capital; any excess earned—which could be due only to lower costs of labor and material, greater efficiency of operation, or a mixture of the two—to be divided between the consumer, in the form of a discount upon his bills, and the utility, in the form of a greater rate of return; similarly, any decrease in the net earnings below the return provided by the base rate, to be shared by the consumer in the form of a surcharge, and the utility in the form of a lower rate of return, until such return to the utility became so low that its solvency was threatened, when the customers' surcharge would carry the burden of holding the earnings at that point.

To illustrate, take a gas or electric utility whose value for rate-making purposes is \$100,000 and which is operated with reasonable efficiency. It is decided by agreement that the "base rates" be fixed to yield sufficient revenue to provide for operating expenses, depreciation, and a return of $7\frac{1}{2}$ per cent, or \$7,500; that any excess earned be divided equally between the consumer and the utility until the return of the utility becomes 8 per cent; that when the return is over 8 per cent and less than 10 per cent the consumer shall get $\frac{2}{3}$ and the utility $\frac{1}{3}$.

The results would be as shown in the next column.

Any losses sustained below 6 per cent would be recouped by future surcharges unless they can be taken care of by the insurance fund. Should earnings again increase, the surcharges would decrease as they were increased, and the utility's return would increase as it was decreased. The utility would not be allowed to earn $7\frac{1}{2}$ per cent or over while any surcharges were being made, and the consumer would get no discount until the company was earning over $7\frac{1}{2}$ per cent.

Per Cent Return Earned	Payment to In- surance Fund	Per Cent Re- turn Allowed Next Year	Per Cent Dis- count to Con- sumer Next Year
7.5	500.00	7.50	.....
8.0	750.00	7.75	1.00
8.5	1,000.00	8.00	2.00
9.0	1,250.00	8.125	3.50
10.0	1,875.00	8.375	6.50
12.0	3,625.00	8.875	12.50
15.0	6,125.00	9.312	22.75
10.0	687.50	8.875	6.50
8.0	375.00	7.75	1.00
7.5	250.00	7.50	.....
7.0	500.00	7.25	surcharges
6.5	750.00	7.00	1.00
6.0	1,000.00	6.50	2.00
5.5	1,000.00	6.00	2.00
5.5	500.00	6.00	2.00
5.0	1,000.00	6.00	4.00
6.0	.....	6.50	2.00
7.0	500.00	7.25	1.00
7.5	750.00	7.50	.....

It must be understood that the figures used here are illustrative and are not urged as being proper for any particular case, but simply to try to make the principle clear. There should probably be a restriction of the total amount to be allowed to accumulate in the insurance fund, sums payable thereto after this amount is reached to be divided between the consumer and the utility on the same basis as excess earnings. Thoro public control of accounting, of additions and betterments, standards of service, and issuance of securities would be a necessary part of any such agreement.

Advantages of Such Agreements

This form of agreement has many advantages. It gives the utility an incentive to increase its efficiency, because that is the only way it can earn a greater return. It protects the consumer, because the only time the utility is allowed a greater return than that necessary to properly perform its functions is when it gives the consumer a lower rate. A lower rate to the consumer is possible only if the company is prosperous. This will tend to prevent the continuous squabbles that have cost both parties so dearly in the past, and the placing of unjust burdens and restrictions on the utility just to "soak" a corporation. The utility's charm as political capital will be considerably reduced, as chances for misunderstanding are largely removed, and, furthermore, it will not add to political popularity to jeopardize by unfair attacks and requirements the consumers' chance for securing lower rates. The man who desires extensions that will not pay, but which will



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demonstrate an ability to hang to the road even on slick streets and on corner turns.

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GOODYEAR

CORD TIRES

benefit his own property, will not be able to secure the public following which he has no trouble in enlisting now.

No Legislation Necessary

The additional safeguards thrown around the utility's investment, and the stabilization of its earnings, will enable capital to be secured on much more favorable terms than are now possible. Both parties will benefit in decreased cost and better service. Capital would certainly be attracted by a lower rate of return than under the usual form of agreement. The rate question would be largely removed from controversy. It would be no longer necessary to fight out a rate case every time conditions change. A great deal of the bitter feeling between the public and utilities arises from disputes over rates, and the number of these disputes should certainly be kept at a minimum. One great advantage of the suggested solution is that no new laws are necessary to make its application possible. Sufficient power now exists where either state commissions or municipalities control such matters.

In giving relief to utilities where immediate necessity is claimed and where if time were taken for a valuation and a rate case the solvency of the utility might be seriously compromised, it is suggested that after a brief study of operating statements, the utilities be given a temporary rate calculated to keep them solvent pending the determination of the physical facts upon which a permanent rate should be based. All earnings in excess of 6 per cent on their fair value as finally determined should be either rebated to the consumer or applied to betterment of service. If the latter course is taken, the amount so used shall not be included in the "rate base" and cannot be capitalized by the company.

The whole point of the plan here suggested is that it impresses the consumer with unmistakable evidence of his interest in the well-being of the utility, and simul-

taneously impresses the utility unmistakably with its interest in increased efficiency and lower costs. The Cleveland, Cincinnati, Boston, Dallas, etc., plan of operating street railways on a service-at-cost basis fulfills only part of these conditions. Cleveland with its fixed maximum fare and fixed rate of return goes only part way in impressing the consumer with his interest in the prosperity of the utility and utterly fails to keep the utility's interest in decreased costs alive. Cincinnati completely answers the first, but entirely neglects the second. Dallas follows Cleveland in general.

The act governing the Boston Consolidated Gas Company provides for a sliding scale of rates and dividends where the base rate is 90 cents per 1,000 cubic feet with a rate of return of 7 per cent, the company to be allowed an additional $1/5$ of 1 per cent return for every 1 cent decrease in the gas rate. This resulted in 80-cent gas and 9 per cent return. The paying of the consumer's share as an extra discount as suggested in this article instead of lowering the rate is believed to be important in impressing the public. Furthermore, the handling of the rates, should less than 7 per cent be earned, makes a rate-case practically necessary instead of extending the automatic idea as suggested herein. The experience in Boston seems to have been satisfactory, altho some opposition has developed and several bills have been introduced in the Legislature from time to time in an effort to compel lower rates, whatever the result might be to the utility. These bills have always been defeated and the principle of the original act has been thereby sustained and approved.

There is only one way by which the public and utilities can exist together and secure the benefits of such association, and that is by coöperation. It cannot be done by fighting, by driving hard bargains, or by injustice on either side. Both sides have been wrong. It's time to get together and to get results.

"The dogmas of the past are inadequate to the present. The occasion is piled high with difficulties and we must rise with the occasion. As our case is new so we must think anew and act anew."—Lincoln.

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The Town Plan as a Basis for a War Memorial

By John Nolen

Town and City Planner, Cambridge, Mass.

THE experience of American towns and cities shows that it is more and more necessary to make a comprehensive study and a general town plan as a proper basis for the solution of any single problem of importance in the development of a town or city. This point of view has recently been well illustrated by the committee in charge of the war memorial for La Crosse, Wis. The committee realized at the start not only that La Crosse had other pressing public problems in addition to that of the soldiers' and sailors' memorial, but also that these problems affect directly a satisfactory decision with regard to the general form, character and location of the proposed memorial itself.

In these days it ought to be apparent that the selection of a worthy and permanently satisfactory site for a war memorial cannot be made without at least a tentative understanding of what is to be done in the future toward the creation of a real community center (of which the proposed memorial would be only a part), and the stability of that center, affected as it would be by improved communication, by parks, and by the districting or zoning of the entire city.

The War Memorial Committee of La Crosse, with more vision and practical sense than some other committees, saw the inevitable relation of other municipal problems to the choice of a war memorial; and the committee determined upon a comprehensive study that should include all of them, even tho at this time nothing could be done except what related directly and intimately to a really successful erection of the war memorial itself.

The situation in La Crosse is common to many American cities. Not one per cent of American towns and cities were ever planned, or even replanned. All their fundamental features—their railroads, main streets, public buildings, parks, etc.—are the accidental results of haphazard, piecemeal, and often unintelligent, procedure.

Often there appears to be no logical or

adequate site for memorial or civic buildings as a group. Therefore, if such buildings are to serve their purpose well, not only now but in the future, sites must be created for them by broad and far-sighted planning. If it is wise to spend a large sum on a complete and beautiful community building as a war memorial, is it not also wise to invest a modest sum in a well-directed investigation of the group of problems upon which action should rest?

What Type of Memorial?

The people of a city have the responsibility for the location, form and character of a peace memorial that shall be appropriate and enduring. What form shall such a memorial take? It would seem that there are only three classes of possible memorials of the world war for the average American community.

The first is what might be a record in the form of something that the community needs, something along the line of its daily life. I mean a hospital, a public bath, a neighborhood school or other indispensable public work. There has been criticism of such memorials as being too utilitarian. When Queen Victoria's Jubilee was being celebrated in England, memorials were put up in practically every English town and city. One town, hoping to accomplish some of the practical things which it found difficult to accomplish otherwise, built a memorial sewer to the noble Queen. Now a sewer is an indispensable requirement for a sanitary community. However, one questions the appropriateness and justification of using it as a memorial.

Then there is a second type of memorial, that is, what might be called a purely symbolic or allegorical war record, usually a monument. Such monuments have their place. They have been erected in great numbers as memorials of other wars, notably our Civil War. Some of them are satisfactory, but most are far from satisfactory. In this country the standard of



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memorial art has been too low. So, again, there will be places where local memorials of the world war will very appropriately take the form of monuments in which the symbolic featuring of courage, loyalty, self-sacrifice, responsibility to duty, or some other high personal quality, will be the controlling motive.

But is not a combination of these two ideas suitable for many places? Is there not some building or institution that the people have not yet been able to get—something that will be serviceable, and yet something that cannot be secured ordinarily because other needs are so insistent? Here is an occasion and an opportunity for adding something out of the ordinary for community life. Should not the town embrace that opportunity and secure such a memorial as a community building, a Liberty Hall or an auditorium as a means of carrying on the ideas and ideals that are connected with the sacrifices and aspirations resulting from the war?

A community building seems one of the most fitting memorials of this war—a war in which men fought for liberty, for freedom, for democracy, and for world peace more truly than in any war which preceded it. We need to establish in our communities civic institutions that will stand for the highest ideals. A Liberty Building would be an effective means of breaking down prejudice, lessening ignorance, and removing social barriers. It would tend to check unrest.

Such a Liberty Building should not be for any one class, not even for soldiers and sailors alone. There should be nothing exclusive about it. The war was not won by soldiers and sailors and marines alone; it was won by the whole people. Victory was not entirely a victory thru force of arms; it was a victory secured thru the conservation of food, thru the Red Cross work, thru subscriptions of every kind.

Enthusiastic as I am, however, for the construction of local community buildings as a means of bettering neighborhood life, I think it would be preferable to build a monument than to construct an auditorium or other social building unless it were fully comprehended what such an active social institution would really involve. It should, if possible, unite all the public and semi-public activities of the entire community.

Therefore, it is necessary that some one should be resourceful enough to provide the local organization for all these social activities in a central building.

The Location of a Community Building

But there is another fundamental question about a community building—or any other public building, for that matter. Where is it to be located? Various principles control the selection of sites for public buildings. One of these is accessibility. What do we mean by accessibility, and how are we going to find out what accessibility is in relation to a permanent memorial, a memorial not for the year 1920, but one that will endure thru a long future? The selection of a site involves a study of the town plan, of methods of street circulation both present and future, and the growth of the town center. Another question, of course, is the appearance of the building as affected by its approach, its setting and background. Such a building should be so located and its surroundings so developed, especially in connection with the grouping of other buildings, as to appeal to our civic pride. It should be put where it will not only be seen, but also seen favorably.

Action in connection with a proposed war memorial is one reason why a town plan should be prepared. But there are often other reasons. The average town is usually confronted with the necessity of making local improvements involving changes sooner or later in streets, public buildings, playgrounds, school properties, etc.

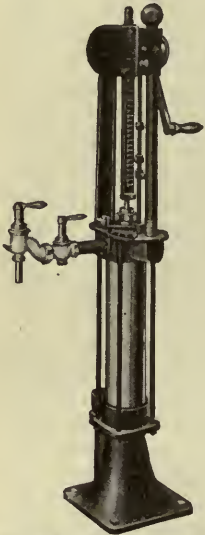
A plan should be comprehensive. To begin with, it ought to include a study of circulation problems. That means railroads and main thoroughfares. It should include a park system. It should also make better provision for housing, especially of wage-earners. Moreover, a town plan involves the proper interrelation of all these elements.

Finally, we have come to appreciate in these recent years that there are two things absolutely indispensable for civic betterment in a democracy. One is public opinion. We have learned how to guide and form public opinion, and we know how dependent we are upon it. The other is leadership. The men and women who have been active as leaders during the war must continue to serve now and help solve the equally difficult problems of peace.

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Yours very truly,
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S. F. Bowser Co., Ltd., Toronto, Canada

Nut Trees for Roads and Parks

By Robert T. Morris

MAPLES, poplars, elms, willows, and the ailanthus are seen along roadways and in parks wherever public ambition for shade has been sufficient in degree to induce authorities to put in trees of one sort or another. For the most part our northern highways are unshaded except by such trees as may accidentally spring up by the roadside, and after competition with various enemies, finally reach above the fences. Trees for city roads and parks, particularly in the larger cities, are often enough selected by some nurseryman favored by the political powers that be, and the nurseryman furnishes what he wishes to supply to the uncritical purchaser. The time for this sort of procedure is passing, and people are beginning to awaken on the subject.

Progress in civilization along this line will mean that we are gradually to dispose of the kind of trees that furnish nothing but bunches of leaves which in due season litter the ground and when swept up contain nothing more than incidental trash. Now, if these trees were to give place to nut trees and fruit trees, there would be very much besides leaves to be swept up in the autumn. One of my friends in Illinois told me that in 1918 he received \$8 per bushel for his black walnuts of a particularly good kind, and that some of the trees bore as many as 14 bushels to the tree.

Suppose that we were to supplant willows and poplars along the roadside with trees which would give us bushels of product worth many dollars per bushel when the leaves were swept up in the fall. It is no more difficult to set out a black walnut than it is to set out a willow or poplar. The first cost is no greater if we set out seedling trees, altho, if particularly good kinds of grafted black walnut are set out, the first cost is something more—yet negligible in view of the return. Investment in a nut tree differs from an investment in an industrial enterprise, for the reason that the plant of the industrial enterprise is decreasing in value from wear and tear the moment after it is completed. A nut tree, on the other hand, is increasing in value from the moment it is set out.

Along our roadsides are many scraggly hazel bushes. These may be easily replaced by the Asiatic tree hazel—a very beautiful tree growing to the size of some of the oaks and bearing many bushels of hazel nuts per year. The Japanese walnuts are very hardy and ready to grow in almost any roadside or park soil, altho, like other walnuts, they are pigs at heart and will promptly avail themselves of the riches of ground that is good



Courtesy of the American Forestry Magazine

A MICHIGAN HICKORY WHICH WOULD BE A WELCOME SHADE-GIVER ALONG ANY MOTOR HIGHWAY OR COUNTRY ROAD

enough to make a farmer's mouth water when he turns it over in the spring. The Japanese walnuts are almost tropical in their foliage habit, with leaves sometimes a yard in length, and they bear early and heavily. Who does not enjoy the sturdy presence of the shagbark hickory, stretching its strong arms out towards the skies and defying the winds and storms? It bears delicious nuts, and if grafted hickories are set out, a crop of extremely valuable nuts may be obtained. Where one wishes to break among deciduous trees for

[illegible]

roadside or park effect, the nut-bearing pine trees of several species will furnish valuable nuts as well as shade and beauty of outline.

One of the arguments against setting out nut trees along the roadsides and parks includes the idea that boys would collect most of the crop. I do not know what grudge these people have against boys, but I know some pretty good citizens who used to go nutting not very many years ago. As a practical matter of fact, if the roadsides and parks were filled with nut-bearing trees, it would be difficult to find boys enough to collect all the crop, even in cases in which the product was to be used to help pay the taxes, as is done in many European villages. Nut-bearing pine trees cannot be used in city parks or along roadsides in thickly populated districts, for the reason that the cone-bearing trees apparently select from the atmosphere certain of the products of combustion of coal, soft coal in particular, with fatal effects. But these

trees may be used along country roadsides and in parks where soft coal is not burned in quantity in the vicinity.

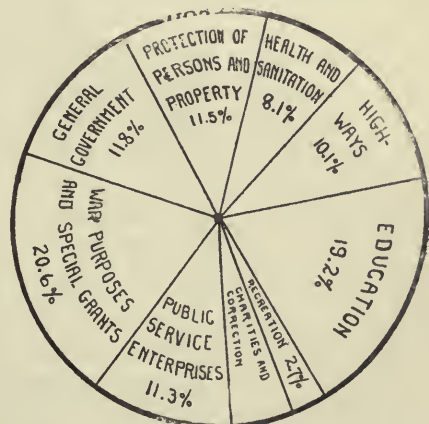
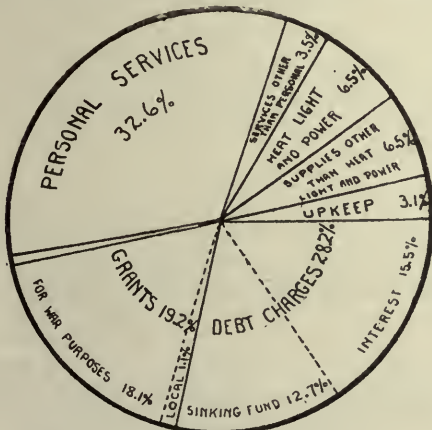
Nut trees of very many species should be chosen in place of ordinary fruit trees for roadside or public park planting. The reason is that the ordinary fruit trees have been cultivated for so many generations that they demand continued cultivation and attention in order to be happy. Nut trees, on the other hand, will thrive much better under conditions of neglect.

EDITORIAL NOTE.—A word of caution is in order in discussing the subject of roadside planting. In many sections of the country, according to road experts, soil conditions are such that shade trees often injure the road surfaces in that they tend to keep the heavier soils, such as clay, from drying out, and cause a decided tendency, particularly in macadam roads, to disintegrate the surface. This is particularly noticeable where shade is abundant. On wide roads where the trees are some distance from the pavement, there is little difficulty, and all the esthetic features of roadside planting may be preserved, but on narrow country roads, where the shading of the road by the trees is one of the principal charms, there is still some difference of opinion as to the wisdom of close planting. In any event, tree planting should not be inaugurated indiscriminately, and the character of the road soil and its subsurface should be studied before trees are set out.

What Does the Taxpayer's Dollar Buy?

An interesting graphic analysis of the city budget of Toronto appears in a pamphlet issued by the Toronto Bureau of Municipal Research, which seeks to show by means of such diagrams as those reproduced herewith where the money comes

lected is open to some objections,—since the average human eye cannot measure and compare angles or distances on the circumference of a circle,—the information contained in this report is most interesting, carefully compiled and well arranged. Such



from, where it goes, how it goes and who spends it. These factors were first carefully analyzed by tables which are of necessity so complex as to be forbidding to the average citizen. Therefore the data were set forth pictorially. While the method se-

a report constitutes an educational factor in municipal life which should be more widely employed. It cannot but help make much clearer to the citizens of Toronto what they are getting for the money which the city is spending for them.

Speaking of **CONCRETE ROADS STREETS and ALLEYS**

53,000,000 Square Yards
Were Placed Under
Contract During 1919—

Over twice that of any previous year. Every state—your state—contributed to this total. Public preference is expressed in this record. Watch 1920!

Concrete highways defy the poundings of traffic year in and year out. They won't blow away during dry weather, won't wash away in wet weather. Let weather and season change—the road won't—for any day, any season is just the same to a concrete road. It's not what they cost to build but the little they cost to maintain that makes concrete pavements economical.

People know what they want and ask for it—**concrete**—a dollar of value for every dollar that they are so generously investing in improved highways.

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Pittsburgh

Salt Lake City
Seattle
St. Louis
Washington

The Collapse of Teaching

By Dr. Frank Crane

"Democracies," said Elihu Root, "are always in danger."

And this United States, the world's greatest experiment in democracy, is in grave danger right now.

This danger is not from the Reds or Socialists or I. W. W. or any other bugaboo of that sort; nor from the high cost of living; nor from the collapse of foreign exchange; nor from any complication growing out of our relations with other nations, European or Asiatic; nor from predatory wealth; nor from labor unions; but from a menace far deadlier than any of these, because it aims right at the heart and life of the nation.

The danger is in the Decline and Fall of Teaching.

Almost anybody who knows anything at all of our country, its ideals and its institutions, knows that it cannot prosper without education. It is illiteracy that is the root cause of Russia's plight. It is the ignorance of the common people that is the matter with Turkey and the Balkan States. It is ignorance that is the culture where every microbe of violence, fanaticism, class hatred, and folly thrives.

And, apparently, we are headed toward it. More than 22 per cent of all the teachers in the United States resigned last year. Of those who remained, 10 per cent were below standard.

In no city of America is education more of a life and death matter than in New York, for here debouches the mighty stream of immigration that pours into the New World from Europe. Fifty thousand school children in New York City are being sent home every week because there is no one to teach them. Since school opened last September 993 teachers have resigned. Classes consequently are "doubled up," which means that the teachers have more pupils than they can attend to properly and the value of the schooling is cut in two. In the greatest city of America education has so degenerated that many children are getting no better instruction than the boys and girls received in the log schoolhouse of the early days of the "blab school," when all the pupils "read out," Chinese fashion.

The cause is simple. It is low pay. When a young teacher can get only \$720 a year teaching, and can get \$1,200 a year as a stenographer, it does not take an economic wizard to predict which job she will choose. Especially since \$750 in 1914 has a purchasing power of only \$512 now.

The issue is plain. It is all a question of what we want most. And what we want most we have to pay most for. And the teacher is far and away the most important worker in the world. He is more essential than the lawyer, the preacher, the doctor, the banker—yea, even than the plumber.

As Professor George D. Strayer of Teachers College puts it:

"The crisis is here. The situation is desperate. If America is to be saved and democracy is to prevail, it will be because the public school system provides us with a trained and intelligent citizenship."

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THE SECO PORTABLE PUMPING APPARATUS

CLEANING sewer catch basins for the
City of Detroit,

At a marked reduction in cost and accomplishing the work 3 to 4 times faster than any other method,

In a clean and sanitary manner, safeguarding the health of the City.

Mounted on Special Kelly-Springfield Chassis.

Let us tell you more about it.

Write for full information and catalogue

THE SPRINGFIELD ENGINEERING COMPANY
SPRINGFIELD, OHIO

News and Ideas for Commercial and Civic Organizations

A Brief History of Jersey City's Prospective Farmers' Retail Market

JERSEY CITY, N. J.—Jersey City is to have a permanent municipal market house this spring that it is believed will do justice to the second largest city in the state. Back of this announcement stands a ten-months' educational campaign conducted by the Jersey City Chamber of Commerce in answer to a "show me" challenge from the Board of Commissioners of that city. Out of justice to the Commissioners, the Chamber of Commerce Market Committee wants it distinctly understood that there is no implied criticism of their skeptical attitude when the market project was first broached, in June, 1919. A public market had been tried in Jersey City several years previous and it had proved a dismal failure. "Too near Newark and New York," "You can't get the farmers," "The public won't patronize your market," were only a few of the pessimistic suggestions offered by the Commissioners.

"Let's try it as an experiment," pleaded the Chamber's Market Committee. "Give us the use of a street corner for a curb market and we will take care of the farmers and the public." The Commission yielded after a public hearing on the question attended by an enlarged market committee that included representatives from the Y. W. C. A., the Women's Club, the various church organizations, the Chamber of Commerce and kindred business organizations, all of whom voiced their approval of the plan. A vacant square at the intersection of two busy streets in the heart of the city's business section was selected as a market site, and permission was granted by the Commissioners for farmers' wagons to stand at this curb market from 6 A. M. until noon on Tuesday, Thursday and Saturday mornings. In order to safeguard the farmers as well as the public against the huckster and his cold storage vegetables, an ordinance

was adopted making it necessary for all persons to secure permits to stand on the market site, and, accordingly, permits were granted only after the Market Committee, in cooperation with the State Agricultural Department, had made actual investigation of the applicants.

The formal opening of the experimental curb market was scheduled to take place on Tuesday, July 8, and for ten days previous the Chamber's Industrial Secretary scoured the surrounding rural districts for farmers. Twelve promised to come in for the first market day. The women's organizations had in the meantime secured pledge cards from 3,000 housewives who agreed to patronize the market. Market day dawned bright and fair, and as early as 7 o'clock upwards of 1,000 women had gathered at the market site, but not a farmer had put in an appearance. At 7:30, however, one venturesome farmer drove up to the square, and fifteen minutes later his wagon was stripped bare. "A dismal failure," said the croakers. "You can't get the farmers to patronize a new market when they can be assured of disposing of their goods in Newark and New York."

On the following day the Market Committee held another meeting, and the Chamber of Commerce stepped into the breach by agreeing to buy at the farm every wagon load of produce that the farmers would truck to Jersey City. Armed with this information, the Committee went back into the country and bought four truck loads for delivery Thursday morning. The newspapers provided the necessary advertising, and another record crowd turned out for the second market day. The Chamber sold its loads at cost within an hour, and then initiated plans for a still larger venture on Saturday, when six truck loads were brought into the market.

Inside of three weeks the Jersey City curb market was on its feet, and on the first of August the demand had increased to such proportions that branch markets were

Performance Counts in Chicago



"DISTINGUISHED SERVICE"

For its unfaltering response to duty, its readiness to perform the most gruelling tasks, its sterling reliability under all conditions of road and weather, the MACK Truck has won the approbation of the Chicago Fire Department.

That other cities voice the same approval is evidenced by the increasing number of MACKS sold thruout the country wherever departments have been efficiently motorized.

Combination Chemical and Hose Cars, Hook and Ladder Trucks, Tractors, Hose Wagons, Fire Department Wreckers, Motor Pumping Engines. Full information on request.



INTERNATIONAL

NEW YORK

MOTOR COMPANY

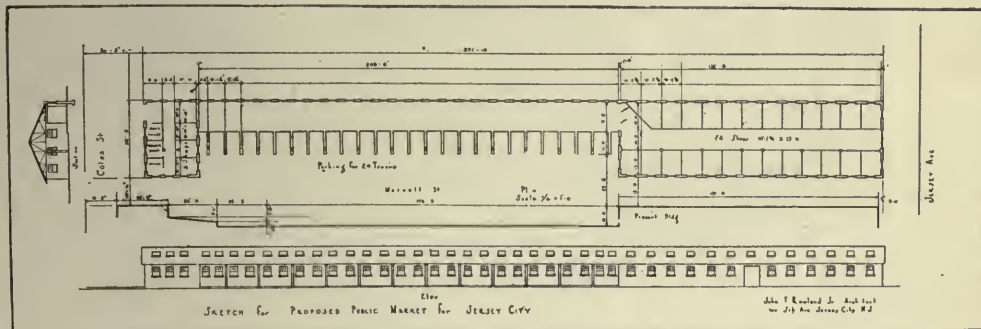
opened in two other sections of the city with an average daily attendance of from twenty-five to thirty farmers. The pessimists became optimists, and the Chamber's committee lost no time in seeking ways and means of making their experiment a permanent institution.

Both the Commission and the Chamber realized that the curb market was becoming too large for a business street, and the Chamber's committee soon selected a site close to the first curb market where a permanent market might be erected, with a substantial shed and stall room for the sale

midnight to 5 A. M., and for retailers from 6 A. M. until 7 P. M.

What Jersey City has done can be accomplished anywhere. Three elements are essential to the success of a public market: (1) a good location easily accessible to the public; (2) the coöperation of the women's organizations; and (3) the separation of the hucksters from the farmers. If the farmer can be assured of a steady patronage, reasonable supervision and freedom from huckster competition, he is glad to truck to the nearest marketing center.

W. G. STANTON,
Manager, Jersey City Chamber of Commerce.



ARCHITECT'S PLAN OF JERSEY CITY'S PROSPECTIVE MARKET HOUSE

of meat, fish and other market foodstuffs. An architect was employed to prepare the plans, and at the close of the curb market season the Chamber was ready to go before the Board of City Commissioners with a project for a permanent market calling for an investment of \$75,000 and offering a return thru the rental of stall space of \$3,000 per year above the cost of maintenance. Needless to say, the proposition met no opposition this time, and Jersey City is now started on its permanent market venture, or will be as soon as the frost is out of the ground.

The plan for the permanent market as approved by the city is presented herewith. It provides accommodations for twenty-four farmers' wagons, also 3,000 square feet of stall space, and the site selected is capable of enlargement as time goes on and the needs increase.

A further development of the retail market idea is the wholesale market which Jersey City is planning to operate on the same site but at different hours, the hours for the wholesalers to be from 12 o'clock

Planting Day an Annual Event in Providence

PROVIDENCE, R. I.—The Providence Chamber of Commerce has conducted a planting day each spring since 1916, with the exception of the year 1918, with excellent results. The plan had to be abandoned in 1918 because of war conditions. The work is carried on annually by the Chamber's Planting Day Committee among the schools and manufacturing establishments in the communities of Providence, East Providence, Pawtucket and Cranston.

The plants and shrubs selected by the committee last year were lilac, spiraea, forsythia, weigelia and Dorothy Perkins rose bushes, and were sold at cost, 10 cents each. Order blanks, circulars telling about the plan and explaining that "all orders must be accompanied by cash in full payment of same," and a circular giving planting directions issued by the Rhode Island State Board of Agriculture, were distributed among the schools and factories. When the orders had all been collected and it was ascertained how many plants were

Another
FEDERAL

"Shorten the Miles to Market—Build Better Roads"



A Federal three and one-half-ton truck operated by the Street Department, City of Laconia, N. H.

Why Laconia Wants "Another Federal"

Laconia, N. H., has solved its city haulage problem definitely and permanently with a Federal Truck. Here is Mr. Chas. French, the city engineer's idea of its service:

"I wish to state that we find the Federal very satisfactory and hope to be able to buy another during the coming season. We are satisfied that Federal Trucks are more economical than teams.

We use our truck hauling ashes, waste, to the dump, curbed stone, gravel, bricks, pipe and coal to constructive jobs.

Our truck does the work of three or four teams on some of our hauls."

There's probably a place in your city where a Federal can save money, write us for information.

"Traffic News," the magazine of haulage sent on request.

FEDERAL MOTOR TRUCK COMPANY
34 FEDERAL STREET DETROIT, MICH.

FEDERAL

One to Five Ton Capacities

desired, the orders were given to the nurseries.

The system worked so well last year that, notwithstanding the fact that there were orders for approximately 30,000 plants, to be distributed among about that many individuals, no discrepancy appeared in the returns of cash to cover the orders. The committee had the \$3,000 all collected and in the bank before placing the orders with the nurseries. The plants were assembled in one place, ready for distribution among the schools and factories in time for Planting Day, April 12.

The Chamber has had splendid testimony—growing testimony—all over Greater Providence to the thriftiness of the shrubs that have been planted as a result of this activity. The organization has always encouraged home-owning and making the homes attractive, because it believes that nothing else goes so far to conserve the civic ideals of a community and produce harmonious social and industrial relations. Copies of the circulars and order blanks used in this work will be furnished upon application.

CLARENCE A. COTTON,
General Secretary, Providence Chamber of Commerce.

Topeka's Mediation Committee Disentangles Industrial Snarls

TOPEKA, KANS.—There was considerable industrial unrest in Topeka several months ago, caused partially by the labor unions' feeling that they were not being given sufficient consideration by the Chamber of Commerce, and by the feeling of some of the manufacturers, members of the Chamber, that the labor unions were being given too much consideration by the Chamber. At the time this unrest was especially evident, there was in progress a mill strike that involved practically all the mill hands in the city. The Chamber of Commerce endeavored to get the factions together, but was unable to work out a satisfactory agreement.

During those conferences it became apparent that if the factions could have been gotten together before the strike was called their differences might have been adjusted, but after the breach came it appeared to be impossible to do so. After a hard fight, the mill operators won.

Immediately after the strike was settled the Chamber of Commerce suggested the

organization of a mediation committee. The plan was presented both to the members of the Chamber of Commerce and to the members of the labor unions, all of whom heartily agreed that it had great possibilities. A mediation committee was accordingly appointed, composed of the following men, whose names are given, with their business connections, in order to show how they were selected:

Paul Huycke, Manager Huycke Lumber Company
F. C. Beck, Manager Johnson & Beck, Plumbing Contractors
C. J. Hodgins, Manager Topeka Paper Company
E. W. Renbarger, Santa Fé shop employe
John S. Zinn, Street Railway Company employe
Lee Nichols, Agent for the Teamsters' Union

These six men selected as their chairman W. L. Huggins, Counsel for the Public Utilities Commission of the state of Kansas.

Since the Mediation Committee has been organized, matters pertaining to capital and labor have moved along with almost no friction. Whenever a controversy arises, the members of this committee get together and work out a satisfactory method of adjustment. The entire city has benefited thereby.

A. L. OLIGER,
Secretary, Topeka Chamber of Commerce.

Successful Annexation Movement Supported by Wheeling Chamber

WHEELING, W. VA.—The Wheeling Chamber of Commerce took a leading part in bringing to a successful culmination the Greater Wheeling Movement. This was a project to annex to the city of Wheeling about eight square miles of suburban territory having a population of over 20,000. The Greater Wheeling Committee, upon which the Chamber of Commerce was represented and which it supported morally and financially, secured the passage of an act by the State Legislature providing for an election upon the question, Wheeling to vote with the towns to be annexed. The election was held on November 26 and the project was carried by an overwhelming majority. The consolidation, which became effective on January 1, 1920, brings the population of the greater city up to more than 70,000, that of the city of Wheeling itself being 50,000. The towns annexed



Selden Trucks in Municipal Service

The Magazine, "TRUCK TRANSPORTATION" will be sent free to all interested. Write Dept. AC

SELDEN TRUCK
CORPORATION
Rochester, N. Y.



ACCOUNTS of good performances of Selden Trucks in city departments in all parts of the country come to us daily.

Fire Departments, in particular, find that Selden Trucks render exceptional service. They have proved dependable under all road conditions and in all kinds of weather.

Selden "In-built Quality," flexible construction enables Selden Trucks to withstand the terrific strains of hard service with a minimum of wear and tear on costly apparatus that must be carried.

Write us for information on the performances of Selden Trucks in municipal service.

1½, 2½, 3½, 5 Ton Worm Drive Models

Selden Motor Trucks

SELDEN TRUCK CORPORATION, Rochester, N. Y., U. S. A.

were Warwood, Fulton, Leatherwood, Woodsdale, Edgewood, Pleasant Valley, Elm Grove and Patterson.

Fourteen reasons for the annexation of these eight separate municipalities are given in the circular that was issued and distributed by the Greater Wheeling Committee during the campaign. They were put in the form of questions entitled "Fourteen Interrogation Points for Greater Wheeling," and are presented herewith:

1. Why should 70,000 people in Greater Wheeling, whose interests are identical and inseparably bound up together, maintain and support nine separate and distinct municipal governments, such as now exist in Wheeling, Warwood, Fulton, Leatherwood, Woodsdale, Edgewood, Pleasant Valley, Elm Grove and Patterson?

2. Does not every consideration of economy and efficiency dictate the welding together of these separate units?

3. Is it not reasonable to suppose that these 70,000 people could better solve the questions and problems affecting each and every one working together, than laboring at cross purposes in nine distinct and separate units?

4. Is it not reasonable to believe that the public-spirited, forward-looking men of both city and suburbs could make greater progress toward better things for the whole community than they now do, endeavoring to get ahead in divided municipalities?

5. If the improvements planned by the Wheeling Development Association will vitally affect the interests of all—city and suburbs—why should not all concerned lend a hand and unite their efforts, and can the excellent plans so far outlined be completely carried out in any other way?

6. As Wheeling has recently adopted a modern up-to-date charter, partly because the suburbs wanted a better and more responsible form of government before annexation would be considered, why shouldn't the suburbs come forward now and help Wheeling make the best of this instrument, for the benefit of the whole community?

7. Whether the suburbs are consolidated with Wheeling or not, their welfare and progress are vitally affected by Wheeling's government; then would it not be the part of wisdom to pool interests with Wheeling and have a vote and a voice in its affairs?

8. Since it is admitted that unless annexation prevails Wheeling must take second or third rank in the state at the next census and appear to the country as a backward, slow-moving town, losing the prestige it has enjoyed, would it not be good business and common sense for the Wheeling community to unite its scattered elements and maintain its first rank and take its place among communities which are going forward, looking forward and increasing in population and power?

9. Since Wheeling can only extend its

boundaries north and east and has been entirely responsible for the thriving suburbs built at its doors, in all fairness and honesty, should his children say to Father Wheeling, "Thus far and no farther," and so stand in the way of the growth and expansion of the whole community for its highest welfare?

10. Since the suburbs will have a voice in the election of every member of council, and thus be a factor in the Greater City Government, why should they not believe that they will exercise a great influence on its character?

11. Since Wheeling has shown its civic spirit by voting \$1,000,000 for new streets, for which Wheeling people alone will be taxed, but which will benefit the whole county, why shouldn't the suburbs trust the old town and join hands in the forward march of the whole community?

12. Since every ward in Wheeling is adequately protected by police and fire service, is there any good reason to believe that these will not be extended to the annexed districts, as expressly provided in paragraph 7 of the law?

13. Since there is an express limit to the municipal tax-levying power, why fear exorbitant or unreasonable taxation under the new régime?

14. Finally, since every city of any size or importance in the world, from New York and London down, has grown and flourished by the annexation of its suburban territory, and since none has ever repented its steps in this direction or unloosed the ties that bound them together, why should Wheeling not profit by their example?

The circular referred to also contains the nine most important points in the annexation law.

One of the directors of the Chamber of Commerce was the father of the Greater Wheeling movement, and another of its directors was chairman of the Greater Wheeling Committee. The manager of the Chamber was the manager of the consolidation campaign; all of which indicates how close was the relationship of the Chamber of Commerce with the movement.

H. P. CORCORAN,
Manager, Wheeling Chamber of Commerce.

Vacant House Registry Spurs Private Home Building

HARRISBURG, PA.—The housing situation in Harrisburg had reached the same critical stage early in 1919 that characterized conditions in all other Pennsylvania cities. A survey was made by the Chamber of Commerce in the month of May which disclosed the fact that there were only thirty-eight vacant houses in Harrisburg. The Chamber then established a Housing Bureau for the purpose of registering the available



Fleet of Packard Mail Trucks ready for the Morning Transfer Service. The widespread preference of Mail contractors for the Packard Truck only reflects its constant day-by-day dependability

Is the City Official Really Interested in Saving the Taxpayer's Money

MOST City Officials are so hampered by the competitive bidding system that it is perhaps natural for them to lose sight of the facts behind the bids.

A bid for trucks, for example. The City really is buying, not trucks in themselves, but transportation. When you consider bids in that light, you begin to see that the real basis for estimating a truck is its cost per ton-mile of transportation—not that it can be assembled to meet a price.

Not alone gasoline, oil and tire costs, but the repairs to be expected, the depreciation to be allowed for, and as to whether the truck is going to be a transportation asset for a long term of years, or will have to be traded in after a few seasons.

Here are some facts, summarized from the National Standard Truck Cost System, operating in 16 cities.

Packard Trucks show 10 per cent lower gasoline costs than any other.

They show 30 per cent lower repair costs than any other.

They show a lower wage cost per ton-mile transportation—make the trip in shorter time.

Ninety per cent of all truck owners who have used the System for a year or more and have compared the Packard with other trucks have standardized on Packard.

The Official who wants to save the taxpayer's money will see the significance of these transportation facts.

"Ask the Man Who Owns One"

PACKARD MOTOR CAR COMPANY, *Detroit*

housing facilities. This bureau was placed under the direction of a Housing Secretary, who has gathered together and maintains at all times a complete list of vacant houses or rooms. During the seven months of its operation the bureau has found homes for 1,800 applicants, from rooms renting for \$15 a month up to apartments renting for \$150 a month.

The publicity attendant upon the activities of the Housing Bureau stimulated the building of 321 private homes during 1919. Statistics show that Harrisburg leads all the Pennsylvania cities in home-building by private capital in 1919.

M. REED McCARTY,
Assistant Secretary, Harrisburg Chamber of Commerce.

A Chamber of Commerce Bulletin that is Both Newsy and Educational

NIAGARA FALLS, N. Y.—The Niagara Falls Chamber of Commerce publishes a weekly bulletin called the *Niagara Falls Citizen* which is quite unique in its character and appearance. It is a very useful medium thru which to give information on special subjects, and there is evidence that it is regarded as one of the most interesting house organs published in this country. The publication has gone thru considerable change in policy since it was first issued. It was begun as a weekly newspaper of current events for the members, carrying a good deal of editorial material disguised in the form of news, besides reports of weekly meetings and notices of forthcoming meetings.

In April, 1919, the policy was entirely changed and the space was wholly devoted to educational propaganda, following the general plan of bureaus of municipal research, many of which issue pamphlets called "Citizens' Business," of which title the *Niagara Falls Citizen* is an adaptation. Instead of emphasizing the citizens' business, however, the Chamber is by implication emphasizing citizenship.

At present each number is devoted to a single subject, the object being to implant one idea at a time, on the principle that the public has a single-track mind. Dealing with various phases of the same subject is even avoided. The question of recreation, for instance, has been dealt with in three separate issues, each one taking up a dif-

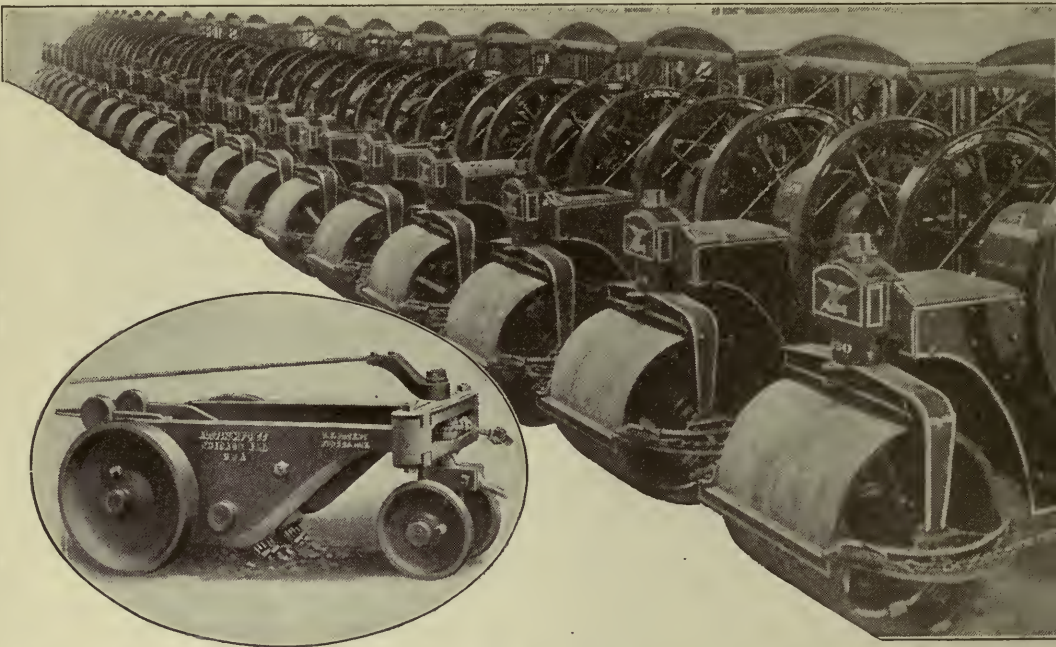
ferent phase of the subject. One had to do with the results of the Chamber's survey of the leisure-time activities of school children. The second related to playgrounds and was somewhat controversial in character. A third, the Carnival Number, was published in an effort to prevent the continual issuing of permits to out-of-town companies to hold celebrations in the city. It brought results, and carnivals in Niagara Falls are now a thing of the past. It is intended later to have a special number on the proposed improvement of Cayuga Island, also a number on the importance of the supervision of play.

A principle in the policy observed in the publication of the *Niagara Falls Citizen* that should not be lost sight of is that the sheet is issued primarily for the information of the members of the Chamber of Commerce and the citizens of Niagara Falls, and is not designed to attract readers outside the city to Niagara Falls. Why should a publication intended primarily for the members of a certain organization be written in the style of an advertisement to persuade persons to move to the city? Commercial organizations issuing bulletins that are devoted in large part to advertising their cities are wasting both their effort and their money, and the publications frequently reflect a lack of constructive policy and vision on the part of the organization, besides failing to reach the persons who might be influenced by such tactics.

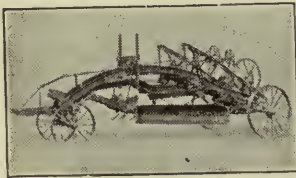
During the year the following subjects have been treated in separate issues of the *Niagara Falls Citizen*:

- Spring Clean-up Campaign
- Victory Liberty Loan
- Housing
- Traffic
- United States Chamber of Commerce
- Niagara Frontier City Planning
- Headquarters
- Recreation (replies to questionnaire)
- Playgrounds
- U. S. Chamber of Commerce Referendum No. 28
- Police Protection
- Carnivals
- Beautification
- Hotel
- Activities for First Six Months
- Civic Center
- Industrial Education Survey
- Foreign Trade
- Civic Center (Special Edition)
- Daylight Saving
- Solicitations
- Activities for Quarter
- Zoning

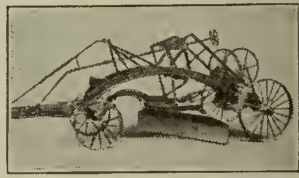
W. J. DONALD,
Secretary, Niagara Falls Chamber of Commerce.



Labor Saving Is Money Saving



Most of the profit you properly can make on a road contract is derived from what you save in labor by intelligent management. Not only must you use labor saving equipment, but you must see it is thoroughly good equipment.



A first class well balanced line of Road Machinery is the

AUSTIN-WESTERN

Manufactured entirely in our own factories and sold under guarantee direct from factory to user, the owner is protected by the oldest established and largest organization of the kind.

Our General Catalog No. 18 describes almost 250 sizes and styles of machines.

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OUR BRANCHES:

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Columbus, O.
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San Francisco
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Memphis, Tenn.
Charleston, W. Va.
Richmond, Va.
Oklahoma City

New Orleans, La.
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OUR LINE

Motor Tandem Rollers
Motor Macadam Rollers
Steam Rollers
Jaw Rock Crushers
Gyratory Rock Crushers

Stone Elevators
Stone Screens
Stone Bins
Quarry Cars
Elevating Graders

Blade Graders
Road Planers
Road Scarifiers
Motor Street Sweepers
Horse Drawn Sweepers

Horse Drawn
Sprinklers
Road Oilers
Dump Wagons
Stone Spreaders

More Good Roads for San Luis Obispo County, Calif.

SAN LUIS OBISPO, CALIF.—Upon the initiative and guidance of the San Luis Obispo County Chamber of Commerce, a good roads bond issue of \$1,500,000 was carried in San Luis Obispo County in December after the second election held in its behalf within three months. The first election was lost by a narrow margin thru apathy as well as active opposition. The second campaign was launched within six days after the first election failed. Following so soon on its heels and capitalizing the interest already created, the campaign resulted in an overwhelming success.

The San Luis Obispo County Chamber of Commerce devoted itself steadily for more than six months to creating favorable sentiment thruout the county for the bond issue. In the first campaign the organization endeavored to pave the way for a new county court house building by incorporating in the issue provision for a new court house site, but apparently two projects on the one ballot made the proposition top-heavy. At any rate, the bond issue failed after an active political fight had been made against the Chamber of Commerce in several parts of the county.

In the second campaign the Chamber organized a County Good Roads Association and enlisted the active support of the progressive interests of the entire county as well as of the Automobile Club of Southern California. This association provided effective defense against political thrusts and the shafts of sectionalism. A whirlwind publicity campaign was conducted. Page advertisements were run in all the county papers, and public meetings were held everywhere. A comprehensive statement on the subject of the bond issue was mailed to every voter in the county. Banners, placards, stickers and all the paraphernalia of a rousing, first-class campaign were put into effective use. Speakers were brought from Los Angeles and Sacramento, including one member of the California State Highway Commission. In the city of San Luis Obispo, the county seat, where the heaviest vote was polled, the Chamber of Commerce brought about what is said to have been the best election organization the city has ever known. A half-holiday was declared and the largest vote in the

history of the community was taken, overwhelmingly in favor of the bond issue.

Spectacular as the campaign was from start to finish, giving the county wonderful and favorable advertising thruout the state, the great outstanding feature of it all was the fact that the progressive elements of the city and county were drawn more closely together. They carried a vital campaign of progress to a wonderful success, one that is but a forerunner of other good things to place the county many years ahead of its present status, and they know from actual demonstration that they *can* by just a little *team work* and *coöperation*.

CHARLES H. ROBERTS,
Secretary, San Luis Obispo Chamber of Commerce.

The Albany Chamber of Commerce Bowling League

ALBANY, N. Y.—Considerable interest in bowling has been aroused in Albany thru the organization of a bowling league by the Albany Chamber of Commerce. Early last fall Dr. George Dugan, chairman of the Recreation Committee of the Chamber, held a meeting of representatives of the leading industries of the city in the Chamber's office, at which the Chamber of Commerce Bowling League was organized. When it came to entering teams for the bowling contests, those who had attended that meeting exhibited much keenness in endeavoring to have their plants and interests represented. Handsome trophies and prizes were offered to the winning teams and to individual bowlers, both by firms and by the Chamber of Commerce.

The games opened in October, and spirited contests have been carried on each week in public alleys. The competing teams have developed such interest that the various teams have paid for the use of the alleys, and the receipts from this source cover the cost of the League games.

The Chamber of Commerce issued printed schedules of the games covering the entire season, which will end in March, containing the names of the firms represented by the contesting teams and the rules to be observed in playing the game.

The Recreation Committee was so well satisfied with the results of its work in organizing this men's bowling league that early in December it formed a bowling league for women, intended for those who are engaged in business as office executives

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THE AMERICAN CITY



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CHICAGO

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or employed in the various manufacturing plants. The women are given exclusive use of the alleys on certain days.

ROY S. SMITH,
Executive Manager, Albany Chamber of Commerce.

Snow Removal Activity of Webster-Dudley Chamber of Commerce

WEBSTER, MASS.—There is considerable traffic between Webster and the neighboring municipalities, especially Worcester, but the country is very open and the roads frequently become impassable even after

obtain subscriptions toward the purchase of a road scraper. An afternoon was then spent at the telephone, calling up the proprietors of the wholesale houses in Worcester who drive to Webster with meats and provisions. Nearly \$500 was secured from them. The scraper was immediately ordered and is being used to clear the snow off the important thoroughfares leading into the town. It was of course necessary to secure permission from the different towns thru which the scraper is being driven, but this consent was readily



THE SNOW-SCRAPER PURCHASED FROM THE GOOD ROADS MACHINERY COMPANY BY THE WEBSTER-DUDLEY (MASS.) CHAMBER OF COMMERCE

a light snow-storm. The Webster-Dudley Chamber of Commerce has solved this problem by purchasing a road scraper that is being used to keep the highways open.

Two years ago the Chamber of Commerce secured the introduction of a bill in the State Legislature petitioning that the State Highway Commission keep the roads clear of snow thruout the state during the winter months. The bill met with considerable opposition because of the claim that the snow was so deep, especially in the western part of the state, that it would be impossible for the Highway Commission to handle it, and the bill was not passed. Another similar bill was introduced this year; but even should it be passed, no action could be taken in the matter by the Highway Commission until next winter.

The Chamber of Commerce finally decided to call together a group of automobile men, who helped in the compilation of a list of all the owners of automobiles in the community, from whom it was planned to

given. In a few instances, votes of appreciation and offers of financial assistance have been received.

HARRY L. NADO,
Executive Secretary, Webster-Dudley Chamber of Commerce.

A Campaign to Reduce Fire Losses

MARSHALL, TEX.—A vigorous campaign in behalf of fire prevention was conducted by the Marshall Chamber of Commerce last August in which the subject was presented to both the home-keepers and the merchants in a forceful manner. Small cards containing suggestions to house-keepers were distributed among the residents by the Boy Scouts. Larger cards containing a different set of suggestions to the merchants were taken around to the stores by a committee of men headed by the Fire Chief, with the request that they be displayed conspicuously. Considerable publicity was also given the subject thru the local papers. The card distributed among the merchants is reproduced on page 317.

Make Streets Clean

WITH

"STUDEBAKER MODEL" FLUSHING AND SPRINKLING UNITS MOUNTED ON MOTOR TRUCKS

Flushing saves time, labor and expense and protects your community from disease germs in the street dirt which is blown from the pavements.

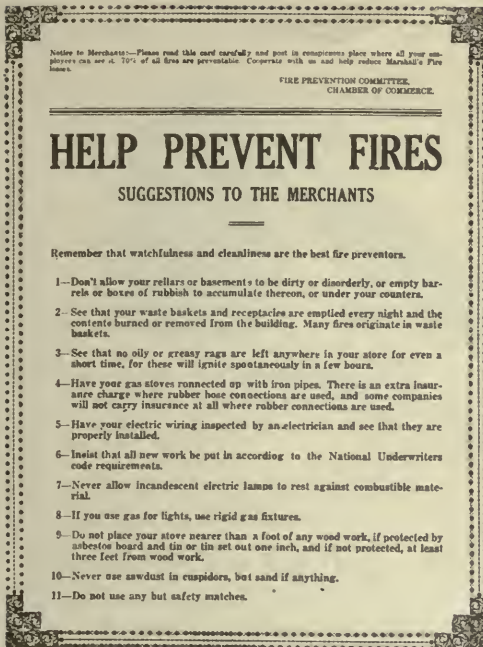
The "White-Wing's" push broom or the rotary brush in a street sweeper does not remove the fine particles of dirt and dust.

Wash your streets with a flusher and make them sanitary.

Write any motor truck manufacturer or ask the truck dealer in your city for complete information on "STUDEBAKER MODEL" Flushing and Sprinkling Units mounted on their truck, or address—

Municipal Supply Company

South Bend, Indiana



CARD SENT OUT TO MERCHANTS BY THE MARSHALL CHAMBER OF COMMERCE

As a result of the campaign, August was a fireless month in Marshall.

The Chamber of Commerce was instrumental during the campaign in getting the City Commission to have the fire plugs gone over carefully to see whether they were in good working order, and if not, to place them in first-class condition.

The records show that during the first six months of 1919 there were 26 fires in Marshall, with a total loss of \$74,590, and that during the last six months there were 15 fires with a money loss of \$12,105, which is quite a favorable showing and proves that the campaign was successful. It is only fair to state, however, that the loss for the first six months was considerably swelled by the burning of a large school dormitory, the loss in this case amounting to about \$38,000. Notwithstanding that fact, the Chamber is convinced that much good has been accomplished thru the preventive measures inaugurated last August.

The campaign was handled by the Chamber's especially appointed Fire Prevention Committee composed of Marshall's leading insurance men. An effort is being made to lessen the fire losses in Marshall to such an

extent that the insurance rate will be materially reduced.

Secretary, Marshall Chamber of Commerce.

SAM FOWLKES,

An Ontario Fire Prevention Resolution

At the annual meeting of the Ontario Associated Boards of Trade and Chambers of Commerce held in Toronto in November, the following resolution on fire prevention, submitted by the Hamilton, Ont., Board of Trade, was adopted:

Whereas the fire loss in the Dominion of Canada since confederation has amounted to \$350,000,000, the cost of public and private protection to \$150,000,000, and the insurance premiums in excess of indemnity to \$197,000,000; and

Whereas this enormous sum constitutes a tax on the people of Canada; and

Whereas the cause of fire is principally from carelessness, faulty building construction, arson and lack of adequate fire prevention laws; and

Whereas the Dominion and Provincial Governments are putting forth every effort to educate the public to the fact that this terrible waste can and must be prevented;

Therefore, be it resolved that the Ontario Associated Boards of Trade and Chambers of Commerce promise and pledge their support and influence to the wise and desirable policies of the Insurance Department at Ottawa, to the office of the Provincial Fire Marshal at Toronto, and to the Ontario Fire Prevention League, to assist in this most important and needful work of fire prevention.

That the Dominion Government is determined to put a stop to the wholesale destruction of life and property thru preventable fires is evident from the following legislation lately passed by the Canadian Parliament, quoted from the Criminal Code, Section 515:

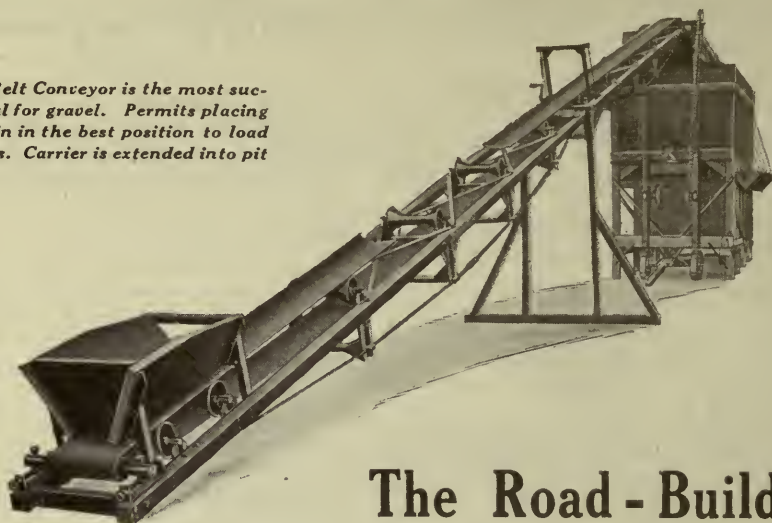
"Everyone is guilty of an indictable offense and liable to two years' imprisonment who by negligence causes any fire which occasions loss of life or property.

"The person owning, occupying, or controlling the premises in which such a fire occurs or on which such fire originates shall be deemed to have caused the fire thru negligence if such person has failed to obey the requirements of any law intended to prevent fires or which requires apparatus for the extinguishment of fires, or to facilitate the escape of persons in the event of fire, if the jury find that such fire, or the loss of life, or the whole or any substantial portion of the loss of property would not have occurred if such law had been complied with."

F. G. MORLEY,

Secretary, The Ontario Associated Boards of Trade and Chambers of Commerce, Toronto, Ont.

The Belt Conveyor is the most successful for gravel. Permits placing the bin in the best position to load trucks. Carrier is extended into pit



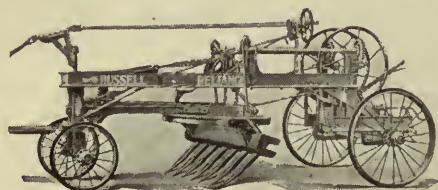
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Medium Size Scarifier

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The City's Legal Rights and Duties

Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Power to Widen Streets

As to what the public necessities require in the way of the width or extension of streets involves questions upon which differences necessarily arise, but these questions are for the determination in the first instance of the legislative authority having the right to condemn. It is entirely proper, and it is frequently the case, that such legislative authorities, including municipal councils, hear parties interested upon these questions, and after such hearings determine the necessity for such improvements as it is authorized to make, the extent to which it is necessary to take land therefor, or the location thereof, and when this question has been decided by the legislative authority it cannot be reviewed by the courts, in the absence of a showing that such decision is capricious, or was made fraudulently, or in bad faith. (West Virginia Supreme Court of Appeals, *City of Huntington, vs. Frederick Holding Co.*, 101 Southeastern Reporter, 461.)

Blanket Police Regulations

The decision of the Mississippi Supreme Court handed down in the recent case of *Cook vs. City of Pascagoula*, 83 Southern Reporter, 305, draws attention to a short-cut that may be taken by cities of Mississippi in defining offenses. One section of the state statutes declares:

"All offenses under the penal laws of the state amounting to a misdemeanor shall, when so provided by a general ordinance of the municipality, also be offenses against the city, town, or village in whose corporate limits the offense may have been committed to the same effect as tho such offenses were made offenses against the city, town, or village by separate ordinance in each case, and upon conviction thereof the same punishment shall be imposed by the city, town, or village as is provided by the laws of the state with regard to such offenses against the state, not in excess of the maximum penalty which may be imposed by municipal corporations."

Another statute empowers municipalities "to pass all ordinances, and to enforce the same by fine not exceeding one hundred dollars, or imprisonment not exceeding thirty days, or both."

The city of Pascagoula adopted an ordinance reading as follows:

"Section 1. That all offenses against the penal laws of the state of Mississippi amounting to a misdemeanor shall also be offenses against the city of Pascagoula, Miss., when committed within the corporate limits thereof.

"Section 2. That any person violating the provisions of this ordinance shall, upon conviction, be fined not less than one dollar nor more than one hundred dollars, or imprisonment in jail not to exceed thirty days, or both fine and imprisonment."

It is held by the Supreme Court that the second section of the ordinance is void as providing a penalty which as to some offenses would exceed the penalty prescribed by the state for the same offense. But it is decided that the first section is not invalidated by the invalidity of the second, the latter being properly disregarded and penalty imposed for a specific offense in accordance with that prescribed for violations of the statute defining the same class of offense against the state.

Powers of Utility Managers

The manager of a municipally owned lighting plant has no broader implied powers to bind the municipality by contracts than has the manager of a privately owned plant. It was not within the scope of the authority of such a manager to make a contract for the plant's fuel requirements for a period extending two and one-half years into the future, and one and one-half years beyond his term of office. And the mere fact that his successor continued to receive deliveries did not show such ratification of the making of the contract as binds the city, in the absence of proof of any corporate action by the city. (*United States District Court, District of Massa-*

THE AMERICAN CITY

DUMP WAGONS



WATSON Dump Wagons have been known to perform constant and satisfactory service in scores of municipalities for ten years and more without showing any appreciable wear.

City and County officials all over the country find that Watson Wagons are the best—the most durable—and the most economical in the end—for hauling garbage, ashes and refuse and for service in connection with all kinds of construction and road maintenance work. One of the many features of a Watson is the non-sagging bottoms—bottoms that over-lap and “stay tight.”

Send us your address so we can forward you full particulars regarding the Watson line of Dumping Wagons, Tractors, Trailers, and Semi-Trailers.

Watson Products Corporation

Successors to Watson Wagon Co.

30 Center Street

Canastota, N. Y.

chusetts, Rockhill Iron & Coal Co. vs. City of Taunton, 261 Federal Reporter, 234.)

Pennsylvania Tax Exemption Law

A statute enacted at the recent session of the Pennsylvania Legislature makes the following tax exemption provisions:

"That all churches, meeting-houses, or other regular places of stated worship, with the ground thereto annexed necessary for the occupancy and enjoyment of the same, all burial grounds not used or held for private or corporate profit, all hospitals, universities, colleges, seminaries, academies, associations, and institutions of learning, benevolence, or charity, with the grounds thereto annexed and necessary for the occupancy and enjoyment of the same founded, endowed, and maintained by the public or private charity, and all school-houses belonging to any county, boro, or school district, all court-houses, jails, poorhouses and all other public property used for public purposes, with the ground thereto annexed and necessary for the occupancy and enjoyment of the same, be, and the same are hereby, exempted from all and every county, city, boro, bounty, road, school, and poor tax; provided, that all property, real or personal, other than that which is in actual use and occupancy for the purposes aforesaid, and from which any income or revenue is derived, shall be subject to taxation, except where exempted by law, for state purposes, and nothing herein contained shall exempt same therefrom; and provided, that all property, real and personal, in actual use and occupation for the purpose, aforesaid, shall be subject to taxation, unless the person or persons, association or corporation, so using and occupying the same, shall be seized of the legal or equitable title in the realty and possessor of the personal property absolutely."

Taxing Telegraph Poles

The highest court of the land lately had occasion to restate the proposition that municipalities may be authorized to tax telegraph poles. (Mackay Telegraph & Cable Co. vs. City of Little Rock, 39 Supreme Court Reporter, 428.)

"That a reasonable tax upon the maintenance of poles and wires erected and maintained by a telegraph company within the limits of a city pursuant to authority granted by its ordinances is not an unwarranted burden upon interstate or foreign commerce or upon the functions of the company as an agency of the Government, and does not infringe rights conferred by the act of Congress, is so thoroly settled by previous decisions of this court that no further discussion is called for," says the opinion.

"These cases establish that a city (supposing,

of course, it acts under the authority of the state) may impose such taxes not merely with respect to the special and exclusive occupancy of the streets and other public places by poles and other equipment, but by way of compensation for the special cost of supervising and regulating the poles, wires and other fixtures and of issuing the necessary permits.
* * *

"There is no support in the record for the contention that a tax of fifty cents per pole per year is unreasonable in amount, even tho it be made to apply to poles standing on private property or upon a railroad right of way as well as to poles erected in the streets."

Sale of Municipal Bonds

A statute authorizing a city to "issue and sell bonds bearing interest not exceeding 6 per cent per annum, payable semi-annually," empowers it to sell for cash public utility bonds below par, at an interest rate not yielding more than 6 per cent per year. Failure of the legislature to require a sale at or above par is to be taken as indicating power to sell below. Nor is such statute violated by issuing bonds bearing interest payable annually, instead of semi-annually, that being favorable to the city. (Washington Supreme Court, Hill vs. City of Seattle, 185 Pacific Reporter, 631.)

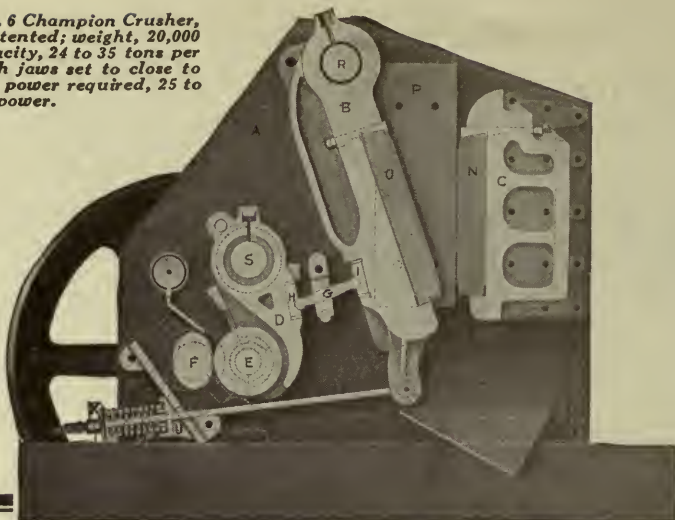
Street Railroad Regulation

An ordinance requiring every street car to be operated by a conductor and motor-man, subject to penalty for violation, is presumed a lawful exercise of the police powers for public safety, and, notwithstanding a contested claim of safety of a one-man car, cannot be held unconstitutional, in the absence of a showing of a clear case of arbitrary conduct on the part of the local authorities. (United States Supreme Court, Sullivan vs. City of Shreveport, 40 Supreme Court Reporter, 102.)

Enjoining Municipal Purchases

One who is a resident, qualified elector, and taxpayer of a city has such interest in the affairs of the municipality as justifies him in suing to restrain the local authorities from acquiring a public utility in violation of a charter requirement for submission of the proposition to a vote by the electors. (Michigan Supreme Court, Schurtz vs. City of Grand Rapids, 175 Northwestern Reporter, 421.)

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12x26; patented; weight, 20,000
lbs.; capacity, 24 to 35 tons per
hour with jaws set to close to
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A Champion for Every Need

There is a Champion Rock Crusher for every kind of work.
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	inches	inches			inches		ft. in. ft. in.	ft. in.	
3	7½x13	2	8 to 12	12	38x 8	170	4-6x 5- 6	4-7	5500
4	9 x15	2	12 to 18	15	48x 9	155	5-6x 6- 6	5-9	8800
4½	10 x20	2	16 to 24	18	50x10	150	7-0x 7- 0	6-1	12500
6	12 x26	2	24 to 35	25	60x 9½	140	6-6x 8- 6	6-2	20000
6A	13 x26	2½	26 to 38	25	60x 9½	140	6-6x 8- 7	6-2	20075
6B	14 x26	3	30 to 45	25	60x 9½	140	6-6x 8- 8	6-2	20150
6C	15 x26	3½	35 to 50	25	60x 9½	140	6-6x 8- 9	6-2	20225
66	12 x26	2	48 to 70	50	60x 9½	140	6-6x15-11	6-2	37050
66A	13 x26	2½	52 to 76	50	60x 9½	140	6-6x16- 1	6-2	37200
66B	14 x26	3	60 to 90	50	60x 9½	140	6-6x16- 3	6-2	37350
66C	15 x26	3½	70 to 100	50	60x 9½	140	6-6x16- 5	6-2	37500
20	18 x50	2	70 to 100	50 to 60	72x12½	105	11-4x 9- 4	10-0	60900
20A	19 x50	2½	80 to 110	50 to 60	72x12½	105	11-4x 9- 5	10-0	61050
20B	20 x50	3	90 to 120	50 to 60	72x12½	105	11-4x 9- 6	10-0	61200
20C	21 x50	3½	100 to 130	50 to 60	72x12½	105	11-4x 9- 7	10-0	61350
20D	22 x50	4	110 to 140	50 to 60	72x12½	105	11-4x 9- 8	10-0	61500
20E	23 x50	4½	120 to 150	60 to 70	72x12½	105	11-4x 9- 9	10-0	61650
20F	24 x50	5	130 to 160	60 to 70	72x12½	105	11-4x 9-10	10-0	61800

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Municipal and Civic Publications

Out of the Ruins.

GEORGE B. FORD. The Century Company, New York. 1919. xv + 275 pp. Illustrated.

This book was prepared by the author when in the service of the American Red Cross Reconstruction Bureau in France, from material gathered from government officials and others engaged in reconstruction work, and by personal observation. It describes in detail the exodus of the people from the French towns, the devastation that followed, and the return of the people to the liberated regions. The public and private organization of relief is explained, and also the working out of the French legislative principle that the government should pay all material war damages suffered by anyone in France. Recent laws affecting reconstruction and the activities of government organization for this purpose are made clear, as well as the work of the cooperative societies. The results of all these efforts and the needs for the future are presented in such a way as to make one realize the truth of the statement: "If ever a nation has earned the right to a helping hand, it is France."

Motion Pictures as a Phase of Commercial Amusement in Toledo, Ohio.

REV. J. J. PHELAN, M. A., Ph. D. Copyright by author, Toledo, Ohio. Social Survey Series III. August, 1919. 292 pp.

The reader is permitted to draw his own conclusions from the data here collected as to the social value of the motion picture industry in Toledo. The information gathered gives full details of the physical features of the business and its mental, educational, moral and social effects. The material is arranged for the use of students of the subject, with question and exercises. There is a section on non-commercialized amusements and community work in the city, and the appendices cover a list of "exhibits" on the subject—evidence of various sorts connected with the great problem of recreation.

Substitutes for the Saloons.

RAYMOND CALKINS. Second edition, revised. With an introduction by Francis G. Peabody. Houghton Mifflin Company, Boston and New York. 1919. xlii + 376 pp.

An investigation originally made for the Committee of Fifty. The preface to this new edition sheds the light of later experience upon the conclusions reached twenty years ago in the discussion of the problem. This preface, covering 25 pages, is of great value. It claims that the saloon has been proved to be in no sense a social necessity, and that as long as it remained in any form whatsoever, no provision of substitutes for it was possible. It also dwells upon the fact that "the extraordinary social emergency created by the Great War has demonstrated beyond doubt that liquor is not a necessary adjunct to social fellowship," and summarizes the results of actual provision of substitutes for the saloon. The Appendix contains much interesting material: "Landmarks in the History of Prohibition in the United States"; "A New Synthesis after the Saloon"; "Prohibition and Social Hygiene"; "The Young Men's Christian Association"; "Prohibition and the Church"; "The Motion Picture Theater as a Saloon Substitute"; and "A Selected Bibliography on the Saloon and Its Substitutes."

Hendricks Commercial Register.

S. E. HENDRICKS COMPANY, INC., New York. 1919. 1,503 pp.

This large directory of manufacturers in all lines of business covers the interests of both buyers and sellers in the architectural, engineering, mechanical, railroad, iron

and steel, and kindred industries in the United States. It is published annually. This latest volume has an exterior index on the front edges of the book, which adds to the convenience of the user. The revision for this year has been especially thorough in view of the great expansion of business since the close of the war.

Housing and the Housing Problems.

CAROL ARONOVICI, Ph. D., Director of Housing, California State Commission of Immigration and Housing. A. C. McClurg & Co., Chicago. 1920. 163 pp. (The National Social Science Series.)

Dr. Aronovici has made no attempt to deal with the technical features of construction or with the requirements of public sanitation which would make this little volume a handbook for inspectors. He presents rather the social and economic principles involved in "providing facilities for the highest possible housing standard within the reach of the largest proportion of the people." Hence it deals with land values and taxation, with the securing of capital, materials and labor, and with maintenance. The laws relating to these points are summarized in the chapter on Legislation. Another chapter presents the method of organizing and carrying on a housing survey. The garden city movement is also dealt with. A list of general references on the subject is included.

Education in Accident Prevention.

E. GEORGE PAYNE, Ph. D., President of the Harris Teachers College, St. Louis, Mo. Lyons & Carnahan, Chicago and New York. 1919. 158 pp. Illustrated.

A treatise showing how accident prevention may be made a part of regular school instruction without the addition of another subject to the curriculum. Prepared at the request and with the approval of the National Safety Council. The program of work here presented is being carried out in the St. Louis public schools. It gives a practical plan for the teaching of accident prevention thru instruction in language, drawing, arithmetic, social and community relations, history, etc. The principle involved is that of making the child himself find out by experience and investigation the need and the methods of self-mastery under all conditions.

The Free City: A Book of Neighborhood.

BOUCK WHITE. Moffat, Yard & Co., New York. 1919. 314 pp.

Advocating the City Republic—the Community State—as "another term for life in its entirety," and filling in the picture of this ideal with epigrammatic description.

Democratic Industry: A Practical Study in Social History.

JOSEPH HUSSLEIN, S. J., Ph. D. P. J. Kennedy & Sons, New York. 1919. ix + 362.

Mortality Statistics, 1917.

BUREAU OF THE CENSUS, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (Sam L. Rogers, Director.) 1919. Quarto, 597 pp.

Housing for East St. Louis, Ill.

Preliminary plan for a housing project, issued by the War Civics Housing Committee, January 20, 1920, in order to interest the industries and citizens of East St. Louis in the housing problems of the city. 10 pp. (Write to the Committee, 331 Federal Building, East St. Louis, Ill.)

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**Just the
Right Light**

Correct lighting in the schoolroom is just as important as proper teaching and proper sanitation.

In thousands of schools where authorities have the true interest of education at heart, Superintendents and Teachers are insuring proper ventilation and the care of the children's eyes by insisting on Oswego Tinted Cambric or Triplex Opaque mounted on the celebrated Hartshorn Rollers.

Write for samples of Colors 204 and 214 in Tinted Cambric, which have been analyzed by chemists and adopted by School Boards of many of the large municipalities.

Stewart Hartshorn Co.

Oswego Shade Cloth Co.

General Office 250 Fifth Ave., N. Y. C.

Chicago Office 332 S. Michigan Ave., Chicago.

Highway Maintenance.

A "Highway Primer," by D. H. Winslow, Secretary of the North Carolina Automobile Association. Its purpose is, "first, to assist the rural population of the state in solving the problems of road maintenance; and, second, to solve some engineering problems of the agricultural population and industries pertaining to roads." It contains, in addition to detailed instructions on road maintenance, a list of state highway officials in the different states of the Union, and in Canada and Alaska, and of highway and road associations throught the country, together with a table of "Funds Provided, to Be Voted Upon and Contemplated for Highway Construction in United States," and one giving mileage statistics of types of surfaced roads, to January 1, 1915. 1919. 48 pp. (Apply to author, at Raleigh, N. C.)

Medical Inspection of Schools.

"Standardization of Medical Inspection Facilities—A Contribution to Modern Schoolhouse Planning," by J. H. Berkowitz, of the Bureau of Welfare of School Children, New York Association for Improving the Condition of the Poor. 1919. 22 pp. Illustrated. (Write to Government Printing Office, Washington, D. C., for Bulletin, 1919, No. 2, of the Bureau of Education, Department of the Interior.)

Existing Public Auditoriums.

Bulletin Number Five of the series "Community Buildings as War Memorials," published by the Bureau of Memorial Buildings, War Camp Community Service, 124 East 28th Street, New York, N. Y. 1919. 39 pp. Illustrated descriptions of auditoriums in a number of cities. (Address the Bureau, as above.)

Some of the Public Schools of North Carolina.

"A Study of the Public Schools in Orange County, North Carolina." Published by the University of North Carolina, Chapel Hill, N. C. June, 1919. Number 166. Extension Series No. 32. 32 pp. Illustrated. (Apply to the University.)

International Association of Fire Engineers.

Proceedings of the forty-seventh annual convention of the Association, held in Kansas City, Mo., June 24-27, 1919. 386 pp. Published by the Secretary, James McFall, General Fire Marshal, Emergency Fleet Corporation, United States Shipping Board, Philadelphia, Pa.

Zoning in Portland, Ore.

"Proposed Building Zones for the City of Portland, Oregon," as tentatively recommended by the neighborhood property owners' meetings and the City Planning Commission, October 25, 1919. (Bulletin No. 4, November 12, 1919.) 32 pp. Giving the reasons for zoning, and explaining the use of districts and the height limits. Containing an article by Herbert S. Swan on "The Legality of Zoning," and a tentative draft of the proposed ordinance. (Apply to the City Planning Commission, 424 City Hall, Portland, Ore.)

Public Health Nursing.

Three pamphlets published by the State Board of Health, Columbia, S. C. By Ruth A. Dodd, R. N., Supervisor of Public Health Nursing and Director of Child Hygiene, of the State Board. "Opportunities of the Rural Public Health Nurse to Develop Child Hygiene," 10 pp.; "The Rural Public Health Nurse," 11 pp.; "Development of a Bureau of Child Hygiene," 7 pp. Issued 1919. (Apply to the State Board of Health.)

Six Months of Americanization in Delaware.

An illustrated pamphlet of 75 pages prepared by Helen Hart, Executive Secretary, Americanization Committee, and Marguerite H. Burnett, Supervisor of Immigrant Education, and published by the Service Citizens of Delaware. In three parts: I, "The Program"; II, "The Night School Experiment"; III, "The Interpretation of America." (Apply to Joseph H. Odell, Director, Service Citizens, Public Library Building, Newark, Del.)

Public Education in Delaware.

A report to the Public School Commission of Delaware, with an appendix containing the new school code. Fifth edition. 1919. 202 pp. Illustrations and tables. Recommending the educational reorganization of the state. (Published by the General Education Board, 61 Broadway, New York, N. Y.)

Street Trees.

An illustrated bulletin (No. 816, of the U. S. Department of Agriculture, January 19, 1920), of 68 pages, prepared by F. L. Mulford, Horticulturist of the Office of Horticultural and Pomological Investigations. Shows the kinds of trees suitable for city streets, their planting, culture and care. (Apply to the Government Printing Office.)

Americanization in Cleveland.

Four pamphlets issued, 1919, under the direction of the Cleveland Americanization Committee: "The Poles of Cleveland" and "The Italians of Cleveland," by Charles W. Coulter, Department of Sociology, Western Reserve University; "The Slovaks of Cleveland" and "The Jugoslavs of Cleveland," by Eleanor E. Ledbetter, Librarian, Broadway Branch, Cleveland Public Library; "The Magyars of Cleveland," by Huldah F. Cook. All illustrated. (Address the Cleveland Americanization Committee, Room 226, Cleveland, O.)

Who Is My Neighbor in Cleveland?

Six studies prepared by John F. Hall, of the Welfare Federation of Cleveland, in conference with a committee composed of representatives of ten local religious and welfare organizations. Giving glimpses of the various "neighbors" in need in the city, of what is being done in their behalf in an organized way, of the principles of the work, and of the privilege and responsibility of the individual. November 1, 1919. 64 pp. (Apply to the Welfare Federation of Cleveland.)

"The Best Motion Pictures."

A catalog of recommended films for church and semi-religious entertainments, issued, 1920, by the National Board of Review of Motion Pictures. Authorized by a religious advisory committee of thirty-odd ministers and laymen of prominence, and based on the replies to a questionnaire as to the standards which should be followed. Listing 900 pictures of various classes. 20 pp. (Address inquiries to the National Board Review, 70 Fifth Avenue, New York, N. Y.)

The Oklahoma Tuberculosis Campaign.

"Some Forward Steps in the Oklahoma Tuberculosis Campaign." Report of the second annual meeting, held in Oklahoma City, September 23-24, 1919. Reprints of the addresses. 79 pp. Illustrated (Apply to Oklahoma Tuberculosis Association, 315 Oklahoman Building, Oklahoma City, Okla.)

A National Department of Public Works.

A pamphlet of 32 pages presented by the National Works Department Association, telling why the Government should have a Department of Public Works which would organize the many and varied public works functions of the Federal Government, now scattered thru 9 separate departments and 39 bureaus and services. This association urges the passage of the Jones-Reavis Bill to create such a department. (Address the Association at 502 McLachlen Building, Washington, D. C.)

Union of Manitoba Municipalities.

Report of the 16th annual convention of the Union, held in Winnipeg Novemehr 18-20, 1919. Giving list of members and officers of the organization, the act of incorporation and the constitution, also the delegates to the convention. 57 pp. (Secretary of the Union, Robert Forke, Pipestone, Man.)

Food Service in the Community Memorial Buildings.

Bulletin No. 12 of the Series "Community Buildings as War Memorials," published by the Bureau of Memorial Buildings of War Camp Community Service, 124 East 28th Street, New York, N. Y. Suggestions of interesting possibilities that may be worked out by community house enthusiasts along the line of food serving, conservation and marketing; its social and scientific aspects. Of value to all who are interested in the practical details of establishing cafeterias, community kitchens and other food centers. 24 pp. Illustrated. (Apply to the Bureau, as above.)

The Maintenance of Roads.

Compiled by J. T. Donaghey, Maintenance Engineer, Wisconsin Highway Commission. Bulletin No. 8. Devoted especially to patrol maintenance on the state trunk highway system. 1919. 95 pp. Illustrated. (Write to W. O. Hotchkiss, Secretary, Wisconsin Highway Commission, Madison, Wis.)

Puritan **CANTONMENT** *DRINKING FOUNTAINS*

Designed for and adopted by the Government
for use in cantonments and Naval Training Sta-
tions during the war—now used by the largest
industries and schools.



Patented
S-570

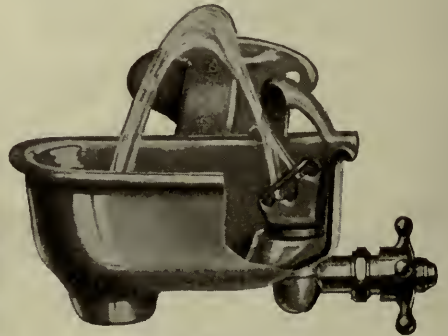
SANITARY—PRACTICAL—FOOL-PROOF

Halsey W. Taylor Company
WARREN, OHIO

*Write
for
Catalogue*



PURITAN S-566 "CANTONMENT" ■



Patented
Sectional View of S-566
Showing Practical Drinking Mound
Formed in Stream

Methods, Materials and Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Digging New York Out of the Snow

The big snow-storm in New York brought out some strange snow-removing devices, and the inhabitants, as they plodded thru the trolley-less streets, found entertainment in watching the operations of the new appliances.

One piece of snow-removing machinery which came in for much attention was a 20-ton truck equipped with mechanism which enabled it to eat its way into the snow-drift, the snow being carried up to the truck body and then ejected down a chute to the gutter or to a smaller truck running alongside. The National Snow Removing Company, owners of the truck, stated that the tests showed it capable of removing 9 cubic yards of snow a minute, and of doing in a single day the work of 1,000 men. It will travel, the owners say, 5 miles an hour in from 3 to 4 feet of snow, and will make a clearance 11 feet wide, throw-

ing the snow 20 feet clear of the truck. The machine is mounted on 40- by 12-inch solid tires, manufactured by the United States Tire Company, Broadway and 58th Street, New York City. Each tire is made to carry a load of 5 tons.

New Wallace & Tiernan Representative

During the absence in Europe of A. M. E. Johnstone, the Wallace & Tiernan Co., Inc., 349 Broadway, New York City, has appointed Gilbert H. Pratt Acting District Sales Representative for New York, New England and northern New Jersey. Mr. Pratt was formerly Chief Chemist of the New York Continental Jewel Filtration Company, prior to which he was Chief Chemist of the Rhode Island State Department of Health, after several years' connection with the Massachusetts Health Department.



A SERVICEABLE PIECE OF APPARATUS USED TO HELP DIG NEW YORK OUT OF THE SNOW IN FEBRUARY

CLOW

Pipe Permanence



A-1398 B
Cutting-In Cross

Here is a service record of cast iron pipe:

Versailles, France	271 years
Weilberg	216 years
Clermont Ferrand	171 years
Glasgow and London	126 years
New York City	86 years

This record is of value to you if you are buying pipe or fittings because it conclusively proves that cast iron is the one material that will everlastingly endure.

Our stock of cast iron pipe and fittings is complete and our rapid service sends your order on its way to you in the shortest possible time.

*For further information write for
the Clow book, "Pipe Economy"*

James B. Clow & Sons

534-546 S. Franklin Street, Chicago, Ill.

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New York	St. Louis	Pittsburgh
Minneapolis	Detroit	Milwaukee
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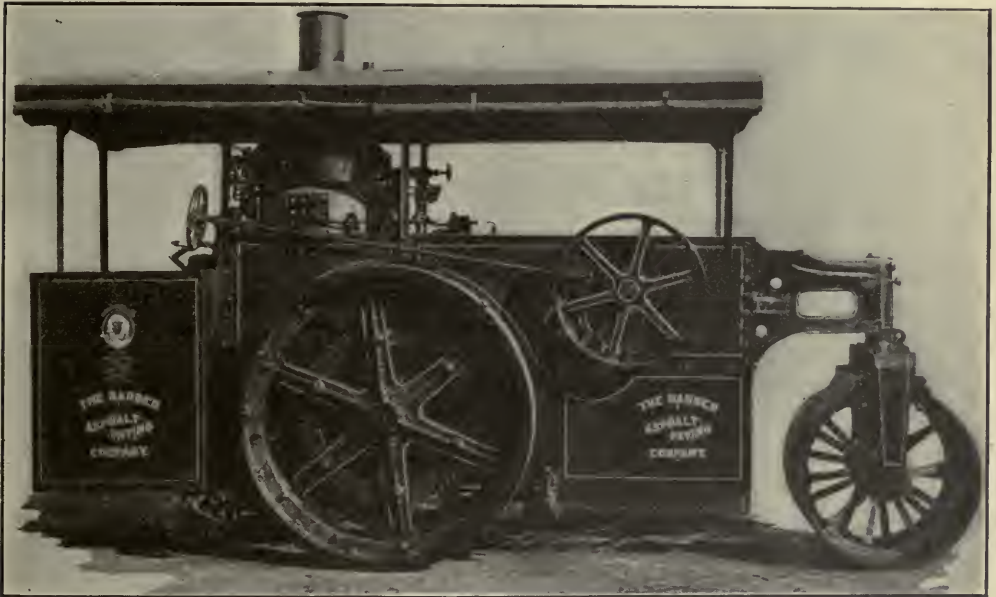
New Macadam Roller Design

Since the invention and perfection of the macadam road roller some thirty or more years ago, there has been practically no change in the design. After many years of experimental work and tests under actual working conditions, the Iroquois Department of The Barber Asphalt Paving Company, Philadelphia, Pa., has perfected and placed on the market an entirely new type of macadam road roller.

The most notable feature of the new Iroquois roller is the vertical boiler which rests upon the steel framework of the roller itself, a separate unit to which nothing is bolted, thus

surface of the highway. The rear wheels are equipped with demountable rims, easily renewed when worn. A steam scarifier is part of the standard equipment. It is adjustable, scarifying to any depth desired the full width of the roller, in the hardest kind of material—a performance which has never been equaled by any other roller.

Shifting of gears is entirely eliminated, and speed changes are made unnecessary, as the engine is much more powerful than in the old-type roller, because of high steam pressure and larger engine cylinders. It has all the flexibility in operation of a tandem roller. Despite the high appearance of the roller, the



NEW TYPE MACADAM STEAM ROLLER WITH PULLEY FOR BELT TO DRIVE ROCK CRUSHER OR OTHER STATIONARY MACHINERY

relieving the boiler from any of the racking strains and weights imposed upon the horizontal boiler of the old-type macadam roller. The boiler of the new roller may be easily removed for repairs without disturbing any other part of the roller. It is claimed to have 50 per cent more heating surface than the boiler of the old-type roller. Extreme accessibility and simplicity is the keynote of design, and every part is ruggedly constructed of the best material to perform the work required efficiently and commercially, and is so placed that it is "get-at-able."

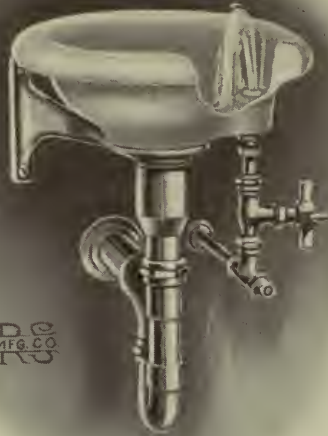
The engine is also a separate unit and rests upon the roller framework, on a three-point suspension that has demonstrated its many advantages in automobile construction. The drive is accomplished thru a differential gear to the rear wheels. This may be locked out for hard, straight pulls. Positive steer is assured thru a steel quadrant that prevents the front roll from dragging and shoving up the

center of gravity is in reality lower than on the old type, absolutely eliminating any danger of tipping over. It is equipped with a feed water heater to insure economy in operation.

Improvements in Indiana Cities

Charles Brossman, Consulting Engineer, Merchants Bank Building, Indianapolis, Ind., has been retained as consulting engineer for the city of Anderson, Ind., to make recommendations and plans to provide for the electrical development of the municipal light plant, whose capacity at present is 10,000 kilowatts. He has also been engaged by the city of Michigan City, Ind., to redesign the entire water-works plant and arrange for improvements to the distribution system. In addition, he is drawing up plans for the sewage disposal plant for the city of Lebanon, Ind.

Are You Familiar with the Danger of the Vertical Stream Fountain?



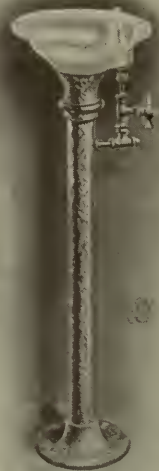
EXHAUSTIVE and scientific tests conducted by eminent authorities prove that vertical stream drinking fountains are a menace to the public health. It has been shown that the water which has touched the lips can fall back into the jet and seriously contaminate the source of supply.

Rundle-Spence "Vertico-Slant" Overcomes All Objections

The "VERTICO-SLANT" is the nearest to the 100% sanitary fountain that can be produced. It is the very latest feature in modern drinking equipment. The stream bubbles out at a practical and convenient angle. Lips cannot touch jet — water cannot fall back. Drinking fountain experts proclaim this fountain as sanitary in every respect — overcoming every objection to the old bubbler type. Ideal for schools, public buildings, parks and streets.

Send address for illustrated descriptive matter treating on the subject of sanitary drinking fountains.

Rundle-Spence Mfg. Co.
Milwaukee Wisconsin

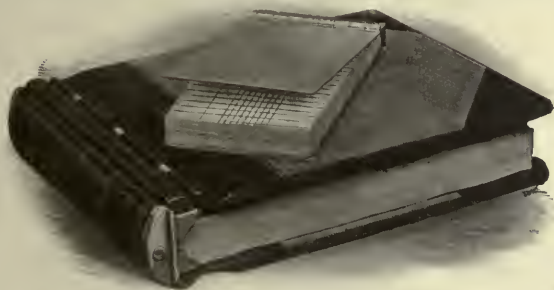


New Courses in Transportation Engineering

It is with interest that we record another university which has added a course in motor transportation engineering to its curriculum. New York University announces that beginning in February, 1920, a new course along the lines of motor truck transportation is to be given by F. Van Z. Lane, Chief Transportation Engineer, Packard Motor Car Company, of Detroit.

Only recently the University of Michigan, Ann Arbor, Mich., announced that Professor Arthur H. Blanchard had increased the scope of the highway engineering curriculum to include courses on motor transport.

The economic and engineering features of motor truck transportation are still in their infancy, and it is hoped that thru the development of motor truck engineers in our universities this great factor in modern transportation will, within a few years, be placed on a truly scientific basis.



THE LOOSE-LEAF SYSTEM APPLIED TO WATER-WORKS METER ACCOUNTS

Loose-Leaf Ledgers and Meter Reading Books

The keeping of proper and easily accessible records of meter readings is of prime importance in any water-works office. The Buffalo Meter Company, 2917 Main Street, Buffalo, N. Y., publishes bound meter books, pocket meter reading books, loose-leaf ledger and record books and handy aluminum holders and slips for meter readers. The bound meter books are made up to give a very simple and concise record of meter accounts, and are so ruled and bound that they may be continued from year to year in successive bound volumes of the same style. The pocket meter reading book contains 100 double pages, 20 lines each, providing sufficient space to hold quarterly readings of 2000 meters for one year. The binding is of stiff drab canvas with a flap for keeping the place while reading meters. The loose-leaf system involves the use of an aluminum holder, which will hold from 200 to 300 slips consecutively arranged according to the reader's route. These slips are $4\frac{1}{4}$ by $8\frac{1}{4}$ inches, and have space for 16 readings. This



A LOOSE-LEAF METER READING BOOK FACILITATES THE WORK OF THE RECORDER

book is used in conjunction with the loose-leaf ledger, which measures $9\frac{1}{4}$ by $11\frac{1}{8}$ inches, and makes an excellent system for keeping meter records in any up-to-date water-works department. Transfers can be readily made from the ledger, as the back unlocks, permitting single sheets to be removed readily and placed in permanent files when completed.

Spraying to Protect Park and Street Trees

A very complete line of small hand and power pumps with especially designed nozzles for spraying various kinds of trees to protect them against the numerous parasites is manufactured by the Deming Company, Salem, Ohio. The hand outfit includes buckets and small tank sprayers, as well as a knapsack equipment which is readily carried by any workman among small trees. The planters' tractor outfit is made



SHADE TREE SPRAYING WITH POWER SPRAYER



A Modern Lighting System

does *not* require separate Lamp Standards as this street scene clearly shows.

Missoula, Montana, is one progressive western city utilizing "ELRECO" Combination Railway and Lighting Poles, which makes separate Lamp Standards unnecessary.

The "ELRECO" Steel Poles support ornamental lighting brackets with modern General Electric Lighting units; also, the span and service wires of the Railway and Lighting Company; keep the streets free and unobstructed from extra Lamp Standards, wooden poles, and a multiplicity of wires, etc.

The usual practice of financing such an installation is to divide the cost between the local Street Railway and Lighting Company, Merchants and the City, making the cost of "WHITE WAY" very reasonable.

What other progressive cities have accomplished is well illustrated in our handsome Catalog "F", sent on request to those interested.

Electric Railway Equipment Company
CINCINNATI, OHIO.

New York Office — 30 Church Street



similar to a wheelbarrow and can be readily transported by one man. The power outfits are particularly adaptable to municipal park and street use and are equipped with Duplex pumps and 2- and 3-horse-power Novo engines, and tanks of capacities of 150 and 200 gallons.

Pipe Bending Machines

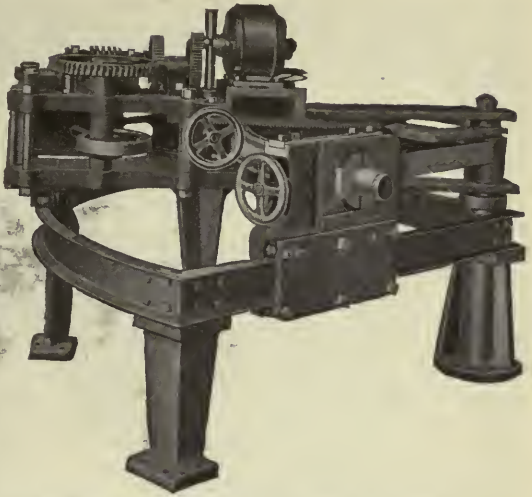
One of the most interesting pipe-bending outfits is manufactured by the American Pipe Bending Machine Company, 14 Pearl Street, Boston, Mass. It is claimed that this "Wonder" machine will bend all sizes of pipe generally used, to any required degree, quickly and surely. The pipe is bent cold, and the machine handles standard gage or extra heavy pipe without treating or filling. The pipe is not weakened nor the seams opened, and it is claimed that any boy laborer or helper can understand and operate it without possibility of a mistake. The model "S" machine can be knocked down in a few minutes and taken from job to job, and the weight of the model "A" standard machine with a full set of bending forms is only 523 pounds. This pipe bender eliminates much of the time lost in cutting, threading and fitting an elbow joint, as one of these benders, operated by unskilled workmen, can bend a 2-inch pipe to a 90-degree angle in less than one minute, thus saving valuable time in construction work, and conserving material which would be otherwise wasted. The smooth curves and bends made by this machine prevent the possibility of leakage from the extra joints and greatly reduce the friction.

In addition to hand pipe benders, this company manufactures power pipe-benders, which handle pipe from $1\frac{1}{4}$ to 8 inches in diameter, utilizing the same general principle as the hand-operated outfit.

Refiltering and Circulating the Water of Swimming Pools

One of the banner installations of the Hygeia Filter Company, represented by August Giese & Son, 162 William Street, New York City, was made at the F. E. Willard School of Detroit. The city water is forced thru a No. 16 Hygeia Non Agitator Filter, and flows thru six inlets in the bottom of the pool, until the pool is filled with cold water. These inlets are along the center of the pool from one end to the other end, an equal number of feet apart. The by-pass valve is then closed, and a Kerr Machine Company's turbine pump sucks the water from the bottom of the pool thru a waste outlet thru an American Radiator Company's Ideal Water Heater, No. 364W. The water passes again thru the filter, and the warm refiltered water enters the pool thru the same six inlets.

The dimensions of the pool are 28 by 22 feet, and the average depth 4 feet, making a total of 2,464 cubic feet, and a capacity of 18,480 gallons. The pool can be refilled or recirculated in 4 hours, although the claim at the time of the installation was 12 hours.



MACHINE USED TO FACILITATE PIPE BENDING TO ELIMINATE FITTINGS

Meeting of Water Purifying Manufacturers

At the annual meeting of the Associated Manufacturers of Water Purifying Equipment in Philadelphia in February, Arthur M. Crane, representing the New York Continental Jewel Filtration Company, was elected chairman for the year 1920. He succeeds F. B. Leopold of the Pittsburgh Filter and Engineering Company, who was elected to the executive committee to fill the vacancy created by the election of A. S. Garrett of the American Water Softener Company to the position of Vice-Chairman, succeeding Mr. Crane.

H. F. Tate of the Borromite Company of America remains secretary and treasurer. Membership in the association is open to all firms, companies and individuals regularly engaged in the manufacture of water purification equipment, whether for filtration, softening or sterilization.

George A. Johnson Resumes Private Practice

Colonel George A. Johnson, Utilities Division, Construction Division of the Army, has resigned his commission, and was discharged in the early part of March. Some time ago the announcement was made in this column of the formation of the firm of Johnson & Benham, with offices at 150 Nassau Street, New York City, and Firestone Building, Kansas City, Mo. Colonel Johnson will hereafter be the directing head of this firm, whose affairs up to now have been managed by Major Webster L. Benham. The firm specializes on water-supply, sewerage and public utilities in general, from standpoints of design, supervision of construction and management.

THE LATEST NOVALUX UNIT
for ORNAMENTAL STREET LIGHTING ~ FORM 12



General Electric

General Office
Schenectady, N.Y.

Company

Sales Offices in
all large cities

Monel Metal in Water Meter Construction

In water meters the operating mechanism, its spindle and the intermediate gear are submerged in the water or other liquid, measured, the register gear trains, change gears, register, etc., being situated in an upper section of the meter and removed from contact with the water. These protected parts are actuated by a spindle passing thru a water-tight stuffing box separating the wet and dry sections of the meter.

The combined gear train necessitates for any water meter a large speed reduction in some types of meters—over 1,000 to 1—to enable the rapid rotation of the measuring parts to be suitably recorded on the dial of the meter, to eliminate friction so far as possible, and to secure accuracy of register. As a great part of this reduction is secured thru the submerged intermediate gear train, it is quite obvious not only that for the efficient meter the intermediate gear train must be accurate and positive in action, but that the accuracy of movement must be maintained in the face of the corrosive action of water. The gears and pinions comprising the intermediate gear train of a water meter must be made of a material which will successfully resist the corrosive action of water passing thru the meter. The revolving spindle of the operating mechanism must be equally non-corrosive. In other words, the success of water meters depends in no small measure upon the ability of the intermediate gear train and the operating spindle to withstand the corrosive action of the water passing thru the meter.

It is claimed that Monel metal is the one metal from which these vital parts may be successfully made. This new metal is a distinctive natural alloy of nickel and copper found in the Sudbury District, Ontario, Canada. It is for all practical purposes non-corrodible, strong as steel, exceedingly tough, and on account of its high nickel content—approximately 67 per cent—is practically immune from oxidation. These are all properties highly desirable in the actuating members of water meter mechanism subjected to the attack of corrosive waters. Monel metal has proved so successful in water meter service that one of the prominent manufacturers of water meters states that he knows of no case of a meter failing to measure accurately thru the corrosion of the Monel metal.

It is recommended by The International Nickel Company, 43 Exchange Place, New York City, that in all types of water meters all moving parts, with the exception of the hard rubber measuring device which itself is non-corrodible, should be made of Monel metal. The necessity for this may be appreciated when it is realized that these parts are mostly gears with fine teeth easily impaired by any corrosion of the metal, and that the accuracy and efficiency of the meter is largely dependent upon the absence of the frictional resistance and load which any corrosion of moving parts would obviously develop.

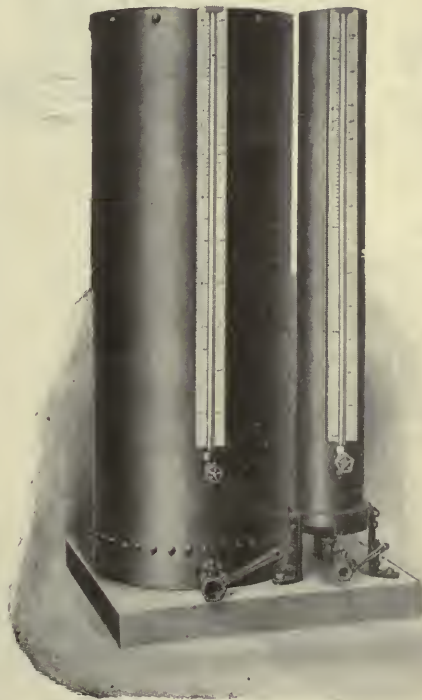
Pullar Again Active in Pioneer Asphalt

H. B. Pullar has resumed active management of the Pioneer Asphalt Company, Lawrenceville, Ill., specializing in the manufacture and sale of expansion joints, asphaltic cement and asphalt fillers.

Calibrated Tanks for Testing Meters

Much of the time ordinarily consumed in meter testing can be eliminated thru the use of calibrated receiving tanks used as containers for the water measured. Under ordinary conditions the tanks are weighed at each calibration, thus consuming much time. The calibrated receiving tanks manufactured by the Ford Meter Box Company, Wabash, Ind., furnish a combination which has many advantages. There are two tanks, one with a capacity of 12 cubic feet and the other with a capacity of 2 cubic feet, which are used for capacity flow and small flow respectively.

The goose-neck outlet attached to the testing machine may be equipped with a swing joint so that the stream may be diverted from one tank to the other instantly without loss of water, thereby making the apparatus more flexible. These tanks are equipped with accurate calibrated gauges and quick-opening throttle valves which completely and rapidly drain the tanks.



A CALIBRATED MEASURING TANK TO FACILITATE METER TESTING

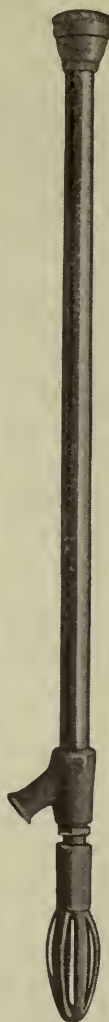


FOR dependability in emergency equip with UNITED STATES SOLID TRUCK TIRES.

Here is a tire made under the new process of vulcanization, i. e., a patent process for forming a permanent union between the steel base and hard rubber.

This new grainless rubber tire will not split or crack under hard service—another feature that makes UNITED STATES SOLID TRUCK TIRES the sturdiest on the market.

**United States Tires
are Good Tires**



Makes Biggest Sprayer A "One-Man" Outfit

One man with one line of 5-8 inch hose can spray trees, using biggest power sprayer if Bean Spray Gun is used, saving from one to two men with ordinary spray rods and nozzles. Put them on other work!

Full fog spray, long distance spray or complete shut-off with simple turn of wrist.

Simple, durable, efficient, easy to clean. Can be carried anywhere.

BEAN Spray Gun

Write for free folder describing action in detail. Save time, labor, money by writing now.

BEAN SPRAY PUMP CO.

36 Hosmer Street,
Lansing, Mich.

332 West Julian Street,
San Jose, Cal.

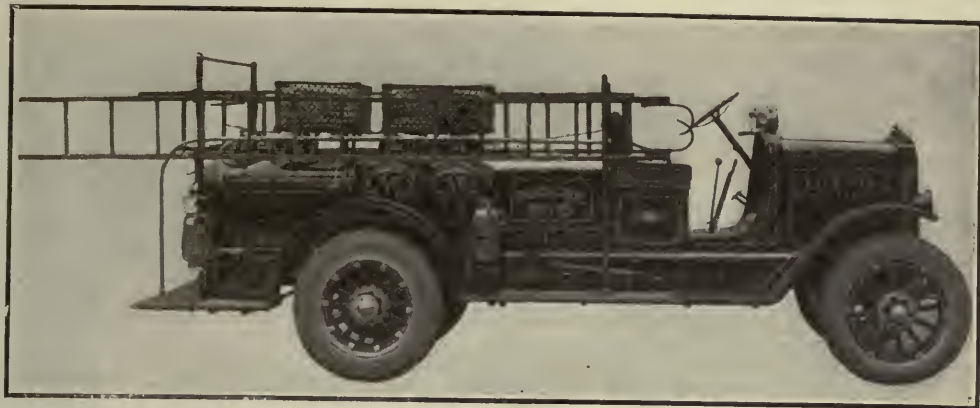
The ELGIN Line

MOTOR DRIVEN STREET CLEANING
MACHINERY

ELGIN SALES CORPORATION

501 Fifth Ave.
NEW YORK

1340 Old Colony Bldg.
CHICAGO
U. S. A.



A TYPE OF CHEMICAL FIRE ENGINE WELL ADAPTED TO SERVE SUBURBAN AND RURAL COMMUNITIES

Chemical Engines Extinguish Most Fires

Most city officials appreciate that 75 to 85 per cent of fires are extinguished by chemicals, and that there are thousands of small towns and villages in the United States which depend solely upon chemical engines for fire protection. Each large town or city in the United States is surrounded by rural districts having various types of buildings which, when a fire does start, usually burn to the ground because of inadequate fire protection. Such a truck as is shown in the accompanying illustration, manufactured by the Oberchain Boyer Company, Logansport, Ind., is furnishing protection to many cities and rural districts thruout the United States. This truck is equipped with two complete units of double 35-gallon tanks providing one continuous stream of chemicals from each unit. There is a large box placed in front of the tank, back of the driver's seat, for carrying one dozen recharges. In addition to the chemical equipment, the truck carries the usual ladders, extinguisher lanterns, and working tools.

New Consulting Engineering Firm

The formation of the Hayes Engineering Service has recently been announced by Harry R. Hayes, formerly Commissioner of Public

Works, Utica, N. Y. This new firm is prepared to render consulting, designing and supervising services for engineering projects, public works, refuse collection and disposal and valuation work. The headquarters of the company are at 26 Gardner Building, Utica, New York.

Expansion of Engineering Firm Announced at Annual Dinner

On February 14 about 80 officials and employees of the organization of Morris Knowles, Inc., met for their seventh annual banquet and entertainment. One of the features of the evening was the announcement of the final arrangement for the consolidation of the organization of the late R. Winthrop Pratt, of Cleveland, Ohio, with that of Morris Knowles, Inc., of Pittsburgh, Pa. The Cleveland office will continue to be operated, but, under the name of Morris Knowles, Inc., and will be under the direct supervision of R. F. McDowell and R. E. Garvin, who were continuously associated with Mr. Pratt until the time of his death. The various branch offices established by each organization will be continued, with the possibility of adding others. The consolidation of these two organizations results in the personnel of 130, which makes this organization one of the largest engineering firms in the United States and Canada.



Courtesy of American-LaFrance Fire Engine Co.

ADEQUATE FIRE PROTECTION WOULD PREVENT HOLOCAUSTS LIKE THIS
View of Mobile, Ala., after the \$800,000 fire of last year

UNION METAL LAMP STANDARDS



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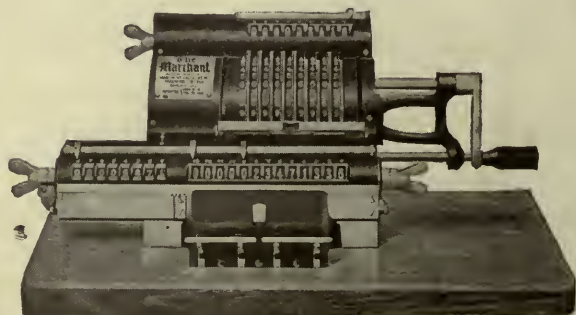
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Does Your City Keep Its Gas Range in the Parlor and Its Piano in the Kitchen?

How a Zoning Law, Administered at Nominal Expense, Will Promote Orderliness in Community Development, Help Real Estate and Benefit the Entire City

By Herbert S. Swan

Secretary, Zoning Committee, New York; Consultant, Commission on Building Districts and Restrictions, Newark, N. J.; Consultant, Zoning Commission, Yonkers, N.Y.; Consultant, City Planning Commission, White Plains, N.Y.

Necessity for Zoning

MILLIONS of dollars will be spent within the next few years on new buildings in every growing city in the United States. This money may just as well be spent toward the permanent up-building of the community as upon hit-or-miss, haphazard growth involving endless construction, demolition and reconstruction without ever achieving any degree of finality. It won't cost any more; indeed, it will cost considerably less, and at the same time it will produce a much better city to live in and to do business in for generations.

The time to zone our cities is now. Every year that is allowed to lapse without the adoption of zoning means that much less zoning in the end. Here is a quiet residential street improved with private dwellings. If zoned now, this street may be maintained for detached houses. Wait until next year to adopt a zoning scheme, and the erection of two or three tenements will place it in the tenement-house class. The erection of a factory or a garage may even put it in an industrial zone. We must have zoning to protect what we have.

Mounting prices make it increasingly necessary to conserve the value of all buildings, old no less than new, from premature and avoidable depreciation.

Zoning expresses the idea of orderliness in community development. Just as we have a place for everything in a well-ordered home, so we should have a place for everything in a well-ordered town. What should we think of a housewife who insisted on keeping her gas range in the parlor and her piano in the kitchen? Yet anomalies like these have become commonplace in our community housekeeping. In what city can we not find gas tanks next to parks, garages next to schools, boiler shops next to hospitals, stables next to churches, or funeral establishments next to dwelling houses? What would be considered insanity if practiced in the ordinary house is excused as an exercise of individual liberty when practiced in the city at large. And yet misplaced buildings are to be condemned much more than out-of-place pieces of furniture.

The whole purpose of zoning is to encourage the erection of the right building in the right place. It protects the man who develops his property along proper lines against the man who develops his property along improper lines. Rightly understood, zoning means the substitution of an economic, scientific, efficient community program of city building for wasteful, inefficient, haphazard growth.



Courtesy of the City Plan Commission, Detroit, Mich.; Harland Bartholomew, Consultant

EXCELLENT EXAMPLE OF AN INAPPROPRIATE STRUCTURE WHICH VIOLATES ALL THE PRINCIPLES OF A ZONING PLAN—HEIGHT, AREA AND USE

Values of adjoining buildings are greatly depreciated. The invasion of such a structure in a residential district would be prevented by a zoning law

How to Get Started in Zoning

The first step in zoning is the enactment of enabling legislation. The exact legislation necessary in any particular state varies according to the degree of home rule exercised by cities. In some states where cities have very broad powers of home rule no enabling legislation is required. In most states, however, cities enjoy only such powers as have been specifically granted them by the legislature; the powers not expressly conferred upon them are denied. The vast majority of cities are probably in this situation.

After the enactment of the enabling legislation comes the appointment of the zoning commission. Experience has demonstrated that the best way actually to accomplish anything in the way of zoning is for the city to appoint, in the absence of a city planning commission, an unpaid commission of representative citizens, this commission having conferred upon it adequate authority, and money to engage the necessary expert help to make a comprehensive survey of the city and to formulate regulations and lay out districts controlling the height, use and area of buildings thruout the community. Having framed a tenta-

tive draft of the regulations and maps, the commission should hold public hearings. Notice of these hearings is generally given in the press, in the same manner as notice of any other proposed ordinance. The suggestions made by property owners at these hearings will prove of the utmost value to the commission in preparing its final reports, which when amended thus is submitted to the city council for consideration. The council, of course, holds public hearings on the final maps and the ordinance, reserving the right to amend either up to the time the regulations are finally enacted.

The Zoning Commission

The personnel of the commission is a constantly recurring problem to every city that embarks upon a zoning program; for the character and ability of the commission will determine as nothing else the success of the work. Shall the commission be composed of city officials, or of representative citizens engaged in various lines of work? The primary qualification for membership is that a man should enjoy the confidence of the community and that he should have considerable breadth of vision and a judicial attitude of mind. It is

what a man is able, and not only able, but willing and ready, to contribute to the zoning work that should determine whether or not he is put on the commission. No man should be appointed simply because he happens to be a city official, a prominent citizen, or a member of a prominent organization.

Too large a commission is not desirable. The difficulty of obtaining a quorum, the necessity for many committees, and the general shifting of responsibility accompanying large bodies all make a small commission more effective than a large one.

Even a large city will seldom, if ever, require a larger commission than fifteen. New York had sixteen; St. Louis, thirteen; Newark, eleven. A commission of seven would probably suffice for most cities of a hundred thousand. Towns of ten or fifteen thousand might actually find a commission of three or five adequate.

The knowledge of local needs can be obtained very much more satisfactorily thru conferences and meetings with interested parties, than by increasing the size of the commission. Neighborhood and taxpayer organizations are only too glad to appoint committees on zoning to coöperate with the commission in elaborating the regulations for different localities. For exact information concerning the height, use and area of buildings, however, the commission will

be forced in the last analysis to rely upon the detailed data compiled by its staff. Many people may think they know all about their cities, but their knowledge cannot take the place of maps and charts classifying different kinds of buildings in defining the several districts.

Objections to Piecemeal Zoning

To be most effective a zoning scheme must be city-wide. Piecemeal zoning inevitably results in leaving a large part of the city unzoned, and the part zoned zoned without reference to the best interest of the city at large. When the whole city is zoned at one time, it is possible to treat all districts similarly situated and of like character in the same manner. When one section of the city is zoned at a time, this is very difficult, if not quite impossible. Each locality being studied separately, the regulations adopted will, of course, be drafted to suit the idiosyncrasies of the local development. A comprehensive survey embracing the entire city would, however, reveal the presence of dozens of localities, each perhaps slightly different yet sufficiently alike to be treated together as one class. The establishment of a multiplicity of kinds of districts, when a few would suffice, serves no good purpose; it only creates confusion and tends to bring all zoning into disrepute.



Courtesy of the Philadelphia Zoning Commission.

THE OVERSHADOWING GAS TANK IN A RESIDENCE DISTRICT

There is also another point to be considered, and that is the attitude of the courts toward zoning. In order that the ordinance passed may have its legality sustained, it is especially important that every care be exercised in framing the proposed regulations so that they fit local conditions, that they are not arbitrary or discriminatory, and that they do not fall within the ban of class legislation. Above all, reasonableness must be the test of both the classification and the districts established. Whether the legality of any particular zoning scheme will be sustained depends more upon the carefulness and fairness put into the preparation of the regulations than upon a lack in the forward-looking attitude of our highest court.

Temporary Ordinances Undesirable

The question of passing a temporary ordinance protecting residential districts, appears to come up whenever a city considers the adoption of a zoning ordinance. Once appointed, the zoning commission will be repeatedly urged to formulate restrictions for certain localities before completing plans for the entire city. This the commission should consistently refuse to do, for when the legality of the law is tested in the courts, the city will be in a much stronger position to defend the scheme if it is able to say that all the regulations are mutually interdependent and part of a common plan. Of course, it is hard to see sections ruined while protective measures are being formulated, but the harm done in this respect will prove very small. If the commission concerns itself with special districts at the start, the injury done in the city at large, due to the later adoption of the plan, will no doubt be much larger in the aggregate than the benefits conferred upon a few scattered residence districts temporarily protected. There are also other objections to temporary ordinances. Such regulations having once been imposed, the owners in such sections of the city are apt to consider themselves adequately protected and to lose all interest in the final working out of the plan. A tentative plan, moreover, is likely to prevent the erection of buildings in sections where they would be allowed in the final plan. Persons who have their building projects interfered with in this manner will naturally be more or less disaffected

and oppose the enactment of any regulations.

Limitation of Congestion

It is a strange phenomenon that despite a half-century fight against bad housing conditions, congestion of population should proceed at an accelerated rate in many cities. More improved and enlightened housing legislation may have effected higher sanitary standards in the environment surrounding the home, but it has not checked the ever-increasing concentration of population. Indeed, to a degree, it has even seemed that this overcrowding of the land was due to the very measures which were designed to improve conditions.

In New York, for instance, new bridges and tunnels have only extended the congested area. The rapid transit lines extending far out into the cornfields have not dispersed the population. Bridges over the rivers, tunnels under the rivers, and subway and elevated lines everywhere grid-ironing the metropolitan district have all helped, each in its turn, to create new congested centers in the purlieu of the city.

How to control congestion is probably as important and difficult a problem as any that confronts some cities to-day. Height regulations afford no satisfactory solution to the question, for even tho the height limits adopted be as low as it is practicable to impose, the fact remains that a large number of families can be housed in low buildings. Nor will area regulations get to the bottom of the matter, for the court and yard requirements will usually be found to admit of the construction of a fifty-family house as readily as the erection of a three-family house. To prevent an undue congestion of population, it is becoming increasingly clear that it is necessary to go beyond the imposition of height and area regulations.

Experience shows that in the absence of any restriction on congestion there is practically no limit upon the population that can and *will* be housed on a unit of ground. In New York, for instance, the new tenements now being erected accommodate a larger number of persons on a given land area than any of the old slum houses on the east side. The average density of the tenements erected in Manhattan in 1914 was 852 persons per acre (counting 4.6 persons to the family). In Brooklyn for the same year it was 697 persons per acre. The maxi-

imum density was over 1,600 per acre. These figures in each case refer to the land within the block, exclusive of that in streets. Statistics show that the maximum is rapidly becoming the average.* In 1914, there were 119 tenement houses containing 4,125 apartments erected in Manhattan. These apartments, which provided accommodations for a population of 18,975 persons, occupied by actual measurement, a land area of only $22\frac{1}{4}$ acres. Making due allowance for the area within streets, this

size of the lot. Thus in the A and B districts the limit expressed on an acreage basis is 140 families; in the C districts 105 families; and in the D districts 25 families. This is equivalent in the A and B districts to 8 families on a 25×100 -foot lot, in the C districts to 6 families. In the D districts it is equivalent to 2 families on a 35×100 -foot lot. A family is defined as any number of individuals living and cooking together on the premises as a single housekeeping unit.



Courtesy of the City Plan Commission, Detroit, Mich.; Harland Bartholomew, Consultant

A ZONING LAW WOULD HAVE SAFEGUARDED THIS RESIDENCE DISTRICT FROM INVASION BY A GARAGE COVERING ITS ENTIRE LOT AND VIOLATING THE BUILDING LINE

is at the rate of over a half-million population per square mile.

To remedy this evil, the Newark ordinance, therefore, prohibits any dwelling or tenement house hereafter erected from accommodating or making provision for more than a given number of families. The number in any particular case varies according to the district and the

In Newark, and in eastern cities generally, the problem is very much more than one of preserving detached house districts. The one-family row house and the multi-family house undoubtedly harm the private detached house, but the same can be said of the big tenement alongside the two- or three-family house. The establishment of one-family detached house districts, tho it limits land-overcrowding in these districts, does not restrict it in those parts of the city left open to apartments. There the owners would be allowed to pile up as many apartments as they might choose.

* For an exhaustive discussion of this subject, see "Land Overcrowding in Brooklyn," a report prepared by Herbert S. Swan for The Tenement House Committee of the Brooklyn Bureau of Charities and The Brooklyn Committee on City Plan in 1916.

Effect of Home Environment Upon Social Conditions

Keeping all kinds of industry out of residence districts is expected to go a long way in improving social conditions, for zoning offers at one stroke, without any expense or any increase of rents, a method of protecting such housing standards as we have achieved against steady deterioration. It does more than that: in defining the direction and character of city growth, it lays the basis for an ever-increasing improvement in the social and economic conditions affecting the whole community.

Never has the intimate relationship between good housing and successful industry been plainer than it is to-day.

The stabilization of employment conditions and the reduction of labor turnover are dependent to a large extent upon what improvement can be effected in industrial housing. So long as no protection is thrown about the environment of the workman's home, so long as it is allowed to be hemmed in with manufacturing establishments pouring out grime, dirt and smoke, we can expect slums filled with hordes of unskilled nomads who wander from plant to plant and from town to town, not only taking no interest in our civic life but bearing towards our institutions the keenest resentment. If the housing of munition and shipyard workers has taught us nothing else, it has taught us that a most intimate relation exists between social unrest and bad housing.

To man the works we must house the man, but the environment of the house is of almost as much importance to the works as the house itself. If there is no house, the man cannot be housed; if the house is not situated in a congenial neighborhood, the man will not want to live in the house.

Benefits Conferred Upon Industry by Zoning

How zoning can be made of as great help to industry as to residence and business is well illustrated in the case of Alameda. Since the adoption of its zoning ordinance the city has commenced the construction in its industrial district of a belt-line railroad, which will serve all factories, connecting them not only with each of the several railroads, thus relieving the factories from domination by any one railroad, but with the water-front, so that freight

can be floated across San Francisco Bay in car-load lots. A highway, nowhere less than 100 feet in width, skirting the edge of the industrial district thruout the length of the city, has also been planned. Laid out for the purpose of facilitating the movement of factory traffic, this street will be improved in such a manner that its pavement will stand up under heavy loads and endure hard wear. The protection of the district against fire, too, is being looked into by the city. So long as factories were allowed to locate anywhere in the city, it was difficult to serve them with sufficiently large water-mains. But, now, as factories can in the future be located only in one district, the city can readily afford to give them all the fire protection they need.

That the relative competitive strength of a city in the domestic and foreign markets of the world is frequently conditioned to quite as great an extent by the arrangements of the industries within the city as by the availability of raw materials and the proximity of a consuming public, is just beginning to dawn upon us.

When factories and warehouses are not located with reference to freight terminals, a situation frequently develops where the down-town streets are unnecessarily congested, to the inconvenience and financial loss of the whole city. A similar condition results where mutually interdependent industries locate in widely separated parts of the city instead of near one another. It is maladjustments of this kind that zoning is designed to remedy.

Among cities similarly situated as to markets and raw materials, it is the city in which manufacturing can be carried on with the lowest overhead expense that will be the most prosperous. The city that drones along and does nothing to promote its industrial development is, in effect, encouraging grass to grow on its own streets.

That a program of industrial zoning and development is essential in every city cannot be questioned. For years the pecuniary losses suffered on account of unregulated building in certain cities have not only equalled but exceeded those suffered from fire. The city that does not protect its citizens against fire is generally considered derelict in its sense of public duty. The same is rapidly becoming true of the city that does not protect its citizens against unregulated building.

Public Docks a Wise Municipal Investment

A Description of the Port Equipment at Astoria, Oregon

By C. I. Barr

Secretary, Astoria Chamber of Commerce

IN 1909 the people of Clatsop County, which embraces an area of 821 square miles, voted by a large majority to found the Port of Astoria at the mouth of the Columbia River and to create a commission to launch and maintain their claims upon the maritime interests of the world. The port development is now accounted as first among the real assets of the Lower Columbia District, is already a paying institution and will unquestionably serve the municipality and the state well in the days following the reconstruction period.

An examination of a chart of the Pacific Coast will show that on the coast-line between San Francisco and the Strait of Juan de Fuca the only harbor for deep-draft vessels is at the mouth of the Columbia River. Here the city of Astoria is located, with a population of 30,000 people, on a peninsula bounded on the north by the great Columbia River, and on the south and west by Youngs River and Youngs Bay. It is a port that must grow in maritime prominence as the Pacific Coast of America develops in its relation with the rest of the world.

The first action of the Commissioners was the examination of the harbor within the port district. A careful study of the terminal site was outlined, and in the spring of 1913, 56 acres of land were purchased on the main channel of the Columbia River and actual work was begun on the construction of the terminals.

The Port of Astoria possesses one of the best harbors on the Pacific Coast, which has an entrance of 40 feet of water at low tide in a channel 3,000 feet wide, and for a width of approximately 1,000 feet an entrance of 42 feet at low tide. The anchorage is good throat; there are 12 square miles of anchorage ground over which the depth is from 24 to 70 feet at low water, and for 8 square miles the depth is from 30 to 70 feet at low water. It is a fresh-water harbor, and by the con-

struction of a jetty is protected from the ocean's swell, which makes the stream navigable the entire year.

During 1918 the site of the Port of Astoria was increased to 304 acres, and the new acreage is now being devoted to modern schemes of improvement that will make it one of the finest marine depots on the coast of America.

The Port Facilities

On Pier No. 1, which is 1,300 feet long, with a frontage of 620 feet, is located a warehouse 90 feet wide and 1,300 feet in length, built "L"-shape of hollow building tile, which, aided by the automatic dry-pipe sprinkler system and stand-pipes, carries a low rate of insurance. Along this pier there is 37 feet of water at low tide. Our average tide is 7 feet 5 inches. On this pier is also located one of the largest bulk grain storage plants on the Pacific Coast, with a capacity of 1,250,000 bushels. We have installed the latest machinery, which is all electrically driven and is capable of handling 15,000 bushels per hour. The elevator consists of 108 bins, 38 of which are 76 feet high and 22 feet in diameter, holding 24,000 bushels each. This elevator offers great inducements to the wheat-producing section of the Northwest.

Adjoining the elevator the Port has erected a six-story flouring mill, which has a daily capacity of 4,000 barrels and is equipped with the latest type of flour-making machinery. This mill along with the flouring mill already in operation gives Astoria a daily output of 5,200 barrels, which means that about 20 car-loads of wheat per day are required to keep these two mills in operation.

On this pier are operated eight electric conveyors, which are capable of handling tonnage to and from vessels at the rate of 100 tons per hour each. Electric ramps and Brown portable pilers, along with ample trucks, slings and sliding boards, are



A PANORAMIC VIEW OF THE

available at all times. This pier will accommodate 100 cars having an average length of 40 feet.

Pier No. 2, which is an open pier used for the assembling of lumber, coal and other commodities of this nature, is 1,445 feet in length with a frontage of 426 feet. Upon this pier are operated three locomotive cranes having a capacity of 50, 30 and 25 tons respectively. A coal bunker is located here which has a bunker storage capacity of 3,000 tons and a loading-out capacity of 175 tons per hour. Open storage for coal is also available up to 20,000 tons. The rate for handling coal from the bunker to the ship's bunker is 35 cents per ton; storage charges 10 cents per ton on open platform and 25 cents per ton in the bunkers. A wharfage charge of 15 cents per ton is made, which includes 15 days' free storage. This pier is especially adapted for the storage and handling of lumber cargoes up to three million feet BM with equipment capable of handling 100,000 feet BM per hour.

Between Piers 1 and 2 a gridiron has been provided for the loading and unloading of locomotives and such equipment on their own wheels, and for the repairing of barges and other small crafts.

Pier No. 3, which is now under construction, is 1,750 feet long, with a frontage of 550 feet. Upon this pier will be located an import and export shed which will be 1,575 feet in length and 160 feet in width. At the present time the import shed is being constructed, and will be ready for use

in about five months. This freight shed will be of reinforced concrete, and will have four electric cargo cranes, as well as tractors, trailers, conveyors and other equipment necessary in expediting the movement of freight. Along this pier there is a depth of water of 40 feet at low tide.

The Port of Astoria owns and operates a belt line railroad, which is 4 miles in length and serves industries located along the water-front, and which has also opened up a frontage for the location of new industries. Along this belt line railroad a steam car electric producing plant is being constructed by the Pacific Power & Light Company, at a cost of \$750,000.

The Port of Astoria has a frontage of 8,940 feet and a total of 8,778 feet of berthing space. The three piers aggregate a total area of 865,676 square feet. The total amount of money expended by the Port and under construction will aggregate \$3,750,000.

The Columbia River, according to statistics from the various lightships, has less fog-bound hours than any other Pacific Coast port. The dredge "Natoma," which is a 20-inch suction dredge, is owned and operated by the Port of Astoria, and is used in deepening the channels of the Columbia River and its tributaries. This enables us to accommodate the largest draft vessels on the Pacific. The dredge is also used in preparing sites for industries locating in this district.

The handling charges of the Port are



MUNICIPAL DOCKS OF ASTORIA, OREGON

lower than those of other Pacific Coast ports, and greater inducements are being offered new steamship lines here than are likely to be found at any other Pacific Coast port. Vessels stopping at this port eliminate the pilotage and towage charges up and down the Columbia and Willamette River, and also save two or three days' time. Astoria has transcontinental freight rates, as do other Pacific Coast ports.

The charges assessed commodities handled over our piers are: wharfage 30 cents, storage 40 cents, loading and unloading 60 cents, handling 60 cents; all are per ton of 2,000 pounds. The wharfage charge allows 20 days' free storage.

Just recently the United States Transport "Marica" was forwarded to Portland, Ore., for a cargo of flour, but owing to her draft of 32 feet she was unable to continue her loading there on account of insufficient depth of water in that harbor, and she was returned to the Port of Astoria for the completion of her cargo. This alone will show that the Port of Astoria is capable

of taking care of the largest vessels operating from any Pacific Coast port.

During January, 1920, a total of 24,427,661 feet of lumber was exported from the Astoria district. This district contains one-sixth of the standing timber in the state of Oregon, or approximately 18 billion feet. During the year 1919, the Columbia River Bar Statistics show that there were 768 vessels entered and 899 vessels cleared; also 3 log rafts containing 18,000,000 feet of logs cleared. The Astoria Flouring Mills forwarded 286,996 barrels of flour for foreign delivery with a valuation of \$2,869,960. The U. S. Grain Corporation forwarded 626,022 bushels of bulk wheat for foreign delivery; value \$1,865,055. This cargo was the first shipment of bulk wheat made from the Columbia River, and was loaded aboard the steamer "West Islay" on July 29, 1919. Final destination of this shipment was St. Nazaire, France. There were shipped to California points 11,125 sacks of flour and 34,535 cases of canned salmon.

Many places are awaiting development to-day and do not proceed for lack of definite plan and of a policy showing the attitude of the governing body. This hesitancy has the effect of throttling any initiative in the expenditure of money by private interests. There are, undoubtedly, many places whose water-fronts, on account of uncertain ownership and lack of plan, are idle, which might be developed if public control was established.

New Garbage Collection and Disposal System in Utica, N. Y.

Municipal Collection and Contract Feeding to Hogs Supplant Contract Collection and Reduction, with Beneficial Results

By George D. Shay

IN April, 1919, Utica, N. Y., began the municipal collection of garbage by means of motorized equipment. This has not only effected a large saving in the matter of cost, but has brought about that which is far more important, in the opinion of municipal authorities and householders alike—a prompt and efficient collection of the garbage of the city.

For many years the collection of garbage in Utica was under private contract and by means of wagons and teams, under the supervision of the Department of Health, inspectors from the Department checking up the collections. At its best the private contract method was never satisfactory. Daily complaints of the non-collection of garbage, oftentimes running up into the hundreds, were received at the Bureau of Health.

During the winter of 1918-19 acute labor conditions forced the garbage contract firm to petition the city of Utica to be relieved of the contract. The Common Council granted the petition, not alone to save the contractors from bankruptcy, but also to relieve a situation which had become unbearable, as the result of the contractors' being unable to carry on their work. It was then, at the suggestion of the Commissioner of Public Works, Harry R. Hayes, who had made a study of the question, that the city decided to take over the collection of garbage.

On January 1, 1919, the contract for the disposal of city garbage expired. This contract had been held for many years by Henry Stappenback & Sons, who owned and conducted a large reduction plant on the outskirts of the city. When new bids were called for, this firm, whose contract price had been \$4,100 for disposal, raised its bid to \$8,000 per year. A new firm, Sauer & Hameline, which had established a pig farm outside of Utica, presented a bid for \$3,100. The contract was awarded to the lower bidder, the city thus effecting a saving of practically \$5,000 a year.

The Collection System

As the farm of the new contractors is located about four miles from Utica, the problem of a long haul was successfully solved by the introduction of motorized equipment.

The city purchased sixteen 3½-yard side-dump Lee trailers, and two 5-ton White motor trucks for the long-haul work, and eight teams of horses for the collection work. This equipment was received in April, 1919, and was immediately put to work under the following system: At 8 o'clock each morning, the eight teams with trailers start from the central station and work the zones allotted to them. These units are at work until the trailers are loaded, when they are exchanged for empty trailers at specified points in their zones. It was found that it required from 1½ to 2½ hours to collect a load of 3½ cubic yards, depending upon the zones. Accordingly, the tractors leave the barn not before 9 o'clock each morning, each with a train of four empty trailers which are exchanged for the loaded trailers at the specified transfer points. The tractors then take their trains of loaded trailers to the pig farm.

The efficiency of this system is at once apparent, as the teams are engaged in the work for which they are best fitted, namely, the slow-speed collection or house-to-house work, while the tractors are doing the long haul.

Two men accompany each team and trailer on the collection from house to house, and a truck driver and one helper work on the trailer trains transporting the garbage to the disposal farm. The drivers of the trucks receive \$3.50 a day each, while the other employees receive \$3 per day. The average work day consists of about six hours, and the men collect during that time from 35 to 40 tons of garbage. The average cost per ton collection and disposal for the months of May, June and



A MOTOR TRUCK WITH ITS TRAIN OF TRAILERS READY FOR THE LONG HAUL TO THE FARM

July, 1919, was \$5.40. This, in comparison with the old method and cost of collection, shows a saving to the city of approximately \$5,000 per year. In addition, there is the matter of efficiency. Under the old system there were numerous complaints about the reduction plant, which was located upon the outskirts of the city, yet adjacent to a residential section. Since the inception of the disposal farm no complaints have been received against it. During August, 1918, 500 complaints were received of the non-collection of garbage from wrathful householders, and on an average 260 complaints a month were received. Under the new system 26 complaints has been the maximum for any one month.

The drivers and collectors take great pride in their equipment, and small cash prizes for the best records of collections are offered monthly, which greatly stimulate competition among the men. The labor, which is usually a difficult proposition on this class of work, is readily secured, and the men have proved unusually honest and faithful.

Many of the drawbacks of the old system have been eliminated. The trailers, tho of 3½-yards capacity, are only 4 feet 11 inches to the loading edge, thus reducing the actual lifting work to a minimum. This means a great deal to the men engaged in collection, in comparison with the high-sided garbage wagons of the old system.

The whole system has now been worked out in complete detail and the city zoned for convenience. As the work has pro-

gressed, the efficiency of the system has increased to a point where regular schedules and times are known to the foremen, and now a loaded trailer rarely waits more than five minutes for the transfer.

The last collection of the day is, of course, taken directly to the central barns, as otherwise the teams would come in with no load, and the transfer to the tractors is made at the barns.

The system has proved satisfactory from every standpoint, and the householders are especially well pleased, for the reason that they are now served twice a week, whereas under the old system the collections in a district were but once in every ten days.

The Disposal Farm

The disposal farm consists of about 160 acres, and at present some 1,600 pigs and a flock of 200 sheep are being fed. It was found upon trial that sheep eat refuse of the character brought to the disposal farm with as much zest as the pigs, and evidently with as good results.

In collecting the garbage, care is exercised that no glass or other substances likely to work injury to the pigs or sheep are brought to the farm. To guard against this danger, the Common Council of Utica enacted an ordinance fixing heavy penalties for conviction of any person or persons placing in the garbage any foreign matter, such as glass, tin cans and the like. The ordinance also provides that all garbage must be delivered in proper receptacles only to the authorized city collectors.

At the farm an expert in the breeding of pigs is employed as superintendent, also a veterinary surgeon, and in the breeding, feeding and housing of the animals a high standard of excellence is maintained, so that the danger of disease is reduced to a minimum.

The large breeding pens at the farm are divided into small pens about 8 x 12 feet in dimension. In these the sows breed and remain with their litters until weaning time. The young pigs are then kept in the breeding pen until able to care for themselves, when they are removed to the feeding colonies in the pastures.

When the garbage arrives in the trailers at the farm it is unloaded from each trailer into a long chute, which conveys it to a point where it is run thru a process tending to remove all dangerous foreign substances. It is then hauled by wagon to the several feeding colonies.

The breeding pens are a remarkable sight. They are divided by long alleyways thru which the expert passes constantly upon his rounds, examining all pigs and their litters for signs of disease. Since its inception, thousands of persons from Utica and elsewhere have visited the pig farm, the first of its kind in this section of the country. Many city officials, too, interested in the plan, have come to Utica from different parts of the country to make a study of this method of garbage disposal and of the motorized equipment for collection.

Comparison of Old and New Systems

The following comparisons between the municipal system and the old contract system for the months of April to November, inclusive, in 1918 and 1919, are of interest. Under the contract system for these months there was collected 5,000 tons of garbage. For the same period this year there was collected 6,283 tons. The average cost per ton-mile of haul under the contract system was \$2.36, while under the municipal system of collection the average is \$1.26. Under the old system the collections averaged three per month; under the present system, since April, 1919, thruout the entire city, collections are made twice a week, and from the hotel and business sections a collection is made every day. The total number of complaints received from April to December, 1918 (old system) was 1,350, while during the same period in 1919 (new system) but 158 complaints for non-collection were received.

The tractors have covered 10,998 miles since the municipal system was started. As a percentage summary, this indicates that under the municipal system there is a 30 per cent increase in collection tonnage over the old system, with an increase in length of haul of 150 per cent; also an increase in the number of collections of about 170 per cent; a decrease of 48 per cent in the cost per ton mile, and a decrease of 90 per cent in the number of complaints for non-collection.



DUMPING GARBAGE AT THE HOG FARM ONTO CHUTE FROM TRAILERS

Water Softening and Filtration at McKeesport

Unusual Conditions of Raw Water at Municipal Plant Necessitate Wide Variation in Treatment

By Edward C. Trax

Chemical Engineer, McKeesport, Pa.

THE city of McKeesport is located in Allegheny County, Pa., at the junction of the Youghiogheny and Monongahela Rivers, at a distance of fifteen miles by river above Pittsburgh. The public water-supply is furnished by a municipally-owned water-works system comprising raw water pumping stations on the Youghiogheny and Monongahela Rivers, a water softening and filtration plant, pumping equipment and a distribution system to deliver the purified water to the consumers.

The first public works to supply water to McKeesport were constructed in 1881. The works consisted of a distribution system, a reservoir at the site of the present dis-

tributing reservoir, and a power and pump plant on the east shore of the Youghiogheny River at a point one mile above the junction of the two rivers. Practically all of the original pipe system is still in use. The reservoir, having been enlarged and lined with concrete, and the power and pump plant, having undergone changes and additions from time to time, form parts of the system of to-day.

The water in the river was satisfactory according to the standards of early days, and the intake and pumping station were placed at a point which then appeared to be the most convenient and suitable location. Because of a lack of thoro under-



ENTRANCE TO THE MCKEESPORT, PA., FILTRATION PLANT

standing or appreciation of the influence of water-supply upon the prevalence of certain diseases, and also because the river water was usually clear and free from odors and tastes, this supply was considered satisfactory for some years.

The Youghiogheny River, the largest tributary of the Monongahela River, is about 125 miles in length and drains an area of approximately 1,800 square miles. It rises in Preston County, W. Va., and flows in a generally northerly direction, emptying into the Monongahela at McKeesport. The watershed is mountainous, and the run-off is unusually large, especially of late years, as the country has been largely denuded of its forests. This results in floods and in low flow in dry weather, and is partly responsible for the violent changes in flow and in quality of the water.

The Acidity of River Water

The river drains a large part of the district known as the Connellsville coke region, and the activity in the vast coal and coke industry resulted in a gradual increase in the discharge of acid mine wastes into the river and its tributaries as more and more mines were opened. Drainage from coal mines is almost invariably highly mineralized; in addition to the salts of aluminum, calcium, lime, magnesium, etc., it usually contains considerable iron in various stages of oxidation, and free sulphuric acid formed by the action of air and moistures on the iron pyrites, present in varying quantities in connection with the coal veins. Alkaline mine waters are by no means rare, altho they are rather unusual.

The effect of a small proportion of mine water in a stream is to lower the natural alkalinity. As the proportion increases, the alkalinity is entirely neutralized and the water becomes acid. The flow of the mine drainage is much more constant than the flow of the stream, which is widely influenced by conditions of rainfall and run-off. The effect of the acid is much more noticeable when the river is low and the mine water consequently less diluted with fresh water. Manufacturing wastes from plants connected with the iron and steel industry may at times add slightly to these conditions in the streams of this district, but it is believed that the effect of these wastes is almost negligible. It has been estimated that not more than 5 per cent of the acid-

iron pollution is due to such manufacturing wastes.

The water in the Youghiogheny River passed thru the various stages described as the amount of mine water discharged on the watershed increased. At first it was only during especially low flow in the river that the water was acid at McKeesport. With the increase in the amount of mine wastes the water has continued to increase in hardness and acidity to the present time. For a number of years the water has been acid at all times except for a few days following heavy rains, when the river is high. During the course of this change in the stream a point was reached where fish could no longer live in the water, and they entirely disappeared from the river below Connellsville a number of years ago. The records for seventeen years show that the acidity has varied from 0 to 390 parts per million. The maximum and average for each year is shown below:

FREE SULPHURIC ACID IN THE YOUGHIOGHENY RIVER AT MCKEESPORT

Year	Parts Per Million	
	Maximum	Average
1902.....	204	36
1903.....	145	30
1904.....	162	48
1905.....	72	27
1906.....	106	23
1907.....	65	19
1908.....	240	63
1909.....	210	31
1910.....	390	81
1911.....	180	30
1912.....	140	30
1913.....	305	34
1914.....	280	56
1915.....	170	24
1916.....	165	32
1917.....	195	46
1918.....	250	55

Besides containing free acid, this water is very hard and holds a large amount of iron in solution. It is very corrosive in its action on piping and plumbing, stains bathroom fixtures, and is unfit for laundry purposes on account of the iron, which leaves yellow stains on white materials washed in the water. Before the purification of this water in 1908, McKeesport was supplied with probably the worst water of any city of its size in the country. A U. S. Government bulletin published in 1906 stated: "It is evident that McKeesport is supplied with a water that is dangerous and in no sense potable or fit for consumption by human beings." The corrosive action of this fluid on pumps and plumbing fixtures was so severe that at times of bad acid conditions it became almost impossible to supply water,

and at one time the leakage amounted to 50 per cent of the water pumped. Typhoid fever was prevalent in the city, and was attributed both to the public water-supply and to polluted wells and springs, which were largely used for drinking water on account of the bad condition of the city supply.

Improvement of Water-Supply

In order to bring about some improvement in the condition of the water, a series of wells were drilled along the river shore

softening and filtration plant being constructed in 1907-8, and placed in operation, October 11, 1908.

The result was little short of marvelous; from the worst water in the country McKeesport changed over night to a supply second to none. The water is soft, as water-supplies go in this district, clear and sparkling, free from color, turbidity, objectionable substances and harmful bacteria, and is entirely safe and suitable for drinking and domestic purposes. It is true that when



THE MAIN BATTERY OF FILTERS OF THE MCKEESPORT WATER-WORKS

near the pump station. The well water was very hard, contained a large amount of iron, and was not satisfactory bacterially, but was used for several years to dilute the water from the river, thereby decreasing the acidity somewhat. This supply was used without treatment until 1908. From time to time there was considerable agitation, and several studies were made as to improvements for relief from these conditions. After investigating the merits of the various suggestions for better water, it was finally decided to build a plant to purify the Youghiogheny River water. This was done accordingly, the present water

a water requires heavy treatment with lime and soda ash sufficient sodium sulphate may be formed to produce a somewhat flat or alkaline taste. This taste is not usually considered unpleasant and is rarely noticed by regular users of the water. In fact, after becoming accustomed to drinking softened water, many considered it more palatable than other supplies. The fact that the softened municipal supply in McKeesport, which has been at times probably the most heavily-treated domestic supply in the world, is used almost exclusively for drinking purposes in the city, is very strong proof of the potability of a softened water. It is

entirely free from the earthy or fishy taste noticed in many surface supplies, and there seem to be no disadvantages or objections to the water for drinking. It is believed that in no city is the public supply more generally used for drinking and the per capita consumption of bottled table water so small.

After the purification process was in operation, many people continued to drink water from polluted wells, which was a source of much concern to the health authorities and, undoubtedly, the cause of many cases of water-borne diseases. A campaign of education was waged against this practice; people were urged to visit the purification plant, which was always kept clean and attractive and where the purification of the water was explained. The public press also assisted very materially.

In addition to this, analyses were made of all well waters used for drinking in the city, and wells proving unsafe were closed, locks being placed on the pumps where necessary.

These measures resulted eventually in the almost universal use of the public supply for drinking purposes, with a very gratifying effect on health conditions in the city. Typhoid fever has almost disappeared; the number of cases has been reduced from a maximum of 512 in 1906 to 13 in 1918, and the death rate from this disease from a maximum of 129 deaths per 100,000 population in 1904 to 4 per 100,000 in 1918.

Treatment of Youghiogheny River Water

The treatment of the raw Youghiogheny River water has required at times enormous amounts of chemicals. The lime used has varied from 100 to 3,800 pounds per million gallons of water treated, and the soda ash from none to 7,000 pounds per million gallons. The average amount used during the entire period of operation of the softening plant with the Youghiogheny River as a source of supply, has been 866 pounds of lime and 1,450 pounds of soda ash per million gallons. The cost per million gallons was \$3.03 for lime and \$11.72 for soda ash, making a total of \$14.75.

On account of this high cost for chemicals, studies of the condition of the Monongahela River near McKeesport were commenced in 1910, analyses of the water being made almost daily. These studies showed that a large saving in chemicals could be

effected by building an intake in the Monongahela River above the inflow of the Youghiogheny and pumping the raw supply from this source to the purification plant, a distance of about two miles. A report was made to the Board of Water Commissioners in 1912, recommending the building of this new intake as a matter of economy. The report was approved by the city authorities but no steps were taken for the immediate carrying out of the project. The general satisfaction with the softened water was so great that it was considered unwise to make a change which was regarded by some as more or less of an experiment. With the outbreak of the world war, however, the price of soda ash became prohibitive to use in the quantity necessary to satisfactorily soften the water from the Youghiogheny River, and the building of the new intake was no longer a matter of good policy, but an actual necessity. Emergency measures were passed by the City Council, providing for the quickest possible execution of the work.

Further Improvements in Supply

This improvement consists of an intake and low-service pumping station along the east shore of the Monongahela River about a mile above the point where the Youghiogheny River joins it. From this station the water is pumped thru a 24-inch cast iron main to the purification plant. This station was ready for operation in August, 1916, and since that time water from the Monongahela River has been used almost exclusively. In the three years the new intake has been in operation, the saving in chemicals has been sufficient to pay double the cost of the improvement.

The Monongahela River is also subject to pollution from coal mines and manufacturing plants. This pollution is very objectionable, and at times expensive to remove; but the expense is in no sense comparable to that of softening the water from the Youghiogheny River. One serious pollution encountered in the Monongahela River has been the disagreeable taste and odor imparted to the water at times by wastes from by-product coke plants located on the river a short distance above the new intake. These characteristic and very unpleasant tastes and odors cannot be removed from the water by any practicable method of treatment, and have been a source of considerable objection to the supply by users



THE MAIN CHEMICAL LABORATORY, WHERE THE PROCESS OF SOFTENING AND PURIFICATION IS CLOSELY WATCHED AND CONTROLLED

of the water. With the coöperation of the State Department of Health, and the officials of the manufacturing plants, the pollution has been reduced to a minimum, and little further trouble from this source is anticipated. In all other respects the new supply has been fully as safe and satisfactory as the softened Youghiogheny River water.

Wide Variation in Character of Water

The purification of these acid waters is beset with no special difficulties, the principal disadvantages being the great cost for chemicals and the extreme variability of the mineral content of the water. The character of the water in the Youghiogheny River is changing constantly, and variations in hardness and acidity of from 100 to 300 parts per million in the course of a few hours are by no means unusual. The iron in solution amounts usually to from 5 to 75 parts per million, equivalent to from 1 to 22 grains per gallon of crystallized ferrous sulphate, and there is also present considerable aluminum sulphate. The usual method of treatment for clarification is

therefore reversed, it being necessary to supply alkalinity in the form of lime and soda ash to neutralize the acid and precipitate the iron and aluminum. The iron and aluminum are present in large excess of the amount necessary to completely coagulate the water, and the natural result of this excessive coagulation is a high percentage of removal of turbidity and bacteria in the settling basins. This accounts in part for the high bacterial purity of the city supply since the softening plant has been in operation.

Another factor which exerts a wide influence on the bacterial life is the germicidal action of the acid and iron salts in the rivers. Considerable sewage is discharged above the intakes in both rivers, and during alkaline conditions in the streams the bacterial numbers run very high, with *B. coli* present in 1/100- to 1/10-cubic-centimeter portions. As the water reverts to its normal condition of acidity, the numbers of bacteria fall off very rapidly, with tests for *B. coli* negative in 10 cubic centimeter portions. In the year 1910, during which the conditions of flow and acidity in

the Youghiogheny River were more variable than usual, the number of bacteria in the river water varied from 0 to 485,000 per cubic centimeter; on 25 days no colonies developed on gelatine plates incubated 48 hours, at 20 degrees C. During a period of more than three months *B. coli* were not found to be present in 4 to 10 cubic centimeter portions, altho chemical examinations indicated gross sewage pollution.

Natural Coagulation in Streams

Another influence active in the removal of bacteria, which is a direct result of the presence of the mine drainage, is the coagulation and sedimentation which takes place in the streams, especially during low acidity. Some of the iron and aluminum sulphates present are precipitated as hydrates by the first mingling of the mine water with the alkaline water of the stream, or by the inflow of small alkaline streams when the main body of the river is acid. The water is thus coagulated, and as the precipitates settle out they carry many of the bacteria with them. The appearance of the streams at such times is brownish yellow in color, or sometimes mottled, greenish streaks and blotches appearing as the precipitates begin to settle out. It has long been known that the Monongahela River near Pittsburgh, altho subject to extensive and recent pollution with sewage, was better from a bacterial standpoint than conditions seemed to warrant. In this river there is a slack water basin in which the rate of flow is normally very low, and there is ample opportunity for coagulation and subsidence, in addition to the increased length of time that the bacteria are exposed to the acid in the water.

As previously stated, the acid conditions in the Monongahela River above McKeesport are much less severe than in the Youghiogheny River. At times this water contains free sulphuric acid and sufficient iron and aluminum to thoroly coagulate it, but a considerable part of the time the addition of a coagulant in the form of sulphate of iron or filter alum is required to produce a satisfactory coagulation. It has been found feasible to coagulate this water by the admixture of a small amount of the highly mineralized water

from the Youghiogheny River, and plans have been completed for the installation of pumping equipment for this purpose. A small proportion of the Youghiogheny River provides sufficient iron and aluminum sulphates to coagulate a large volume of water from the Monongahela River. By this unique method of treatment, the supply of coagulants will be obtained a large part of the time without cost other than that of pumping a small volume of water from the Youghiogheny River to the purification plant.

Method of Purification

The actual purification of the water-supply at the present time is accomplished as follows: The raw supply is taken from either the Youghiogheny or Monongahela Rivers, as found most advantageous in regard to the quality shown by the analyses to produce the most efficient and economical purification. The chemicals used are principally lime and soda ash, with the occasional use of sulphate of iron or filter alum, when the water is turbid or badly polluted bacterially. After treatment, the water is thoroly mixed with the chemicals and allowed to settle from 12 to 18 hours. The result of the chemical reactions is the formation of precipitates, which largely settle out during this period of quiescence, carrying with them most of the suspended matter and bacteria. The water is then passed thru sand filters, which remove the last traces of turbidity and almost all bacteria. The few bacteria remaining in the purified water are not harmful in character. As an additional safeguard, however, provision is made to treat the filtered water with liquid chlorine at a moment's notice, at any time that the treatment and filtration prove insufficient to make the water absolutely safe.

The purification process is controlled by frequent analyses of the water and chemicals used for treatment. Tests of the raw supply and the water from various stages in the treatment are made every four hours. The chemical solutions are tested twice daily, and bacteriological examinations of four samples of water are made daily. These analyses show that McKeesport is supplied with a water which meets in all respects the requirements of a first-class supply.

The New Central Fire Alarm Station at Providence

By Gilbert S. Inman

Superintendent of Fire Alarm, Providence, R. I.

WITHIN the last few months the new central fire alarm station for Providence has been completed and fully equipped. The total cost of the building and equipment exceeds \$125,000. The new fire-proof fire alarm headquarters is located in an open space between the New York, New Haven and Hartford freight yards and the State House, a position which isolates it from all surrounding buildings and avoids danger from fire. No wood whatever was used in the construction of this building. The cement floors, laid on a steel framework, are topped with battleship linoleum. The doors are steel, as are also the paneling and the window frames. Even the screen door at the entrance to the building is of steel. The boards on which the electrical sets are mounted are of slate mounted in steel frames and stained to look like mahogany, as are also the telephone, switchboard and clock cases.

When a box is pulled anywhere in the city, the number is indicated by an annunciator on one of the circuits on the four 10-circuit box line operating boards, as well as on the register. This board is equipped with a loud-ringing gong, which operates if there is any trouble on the circuit. There is also a 20-circuit combination tapper and gong board divided between 10 tapper and 10 gong circuits, as well as a 72-circuit protector board for protecting the lines against foreign current. The latter is equipped with bell contacts to call attention to any troubles on the line.

A circuit terminal and distributing board, which will take care of 72 circuits and dis-

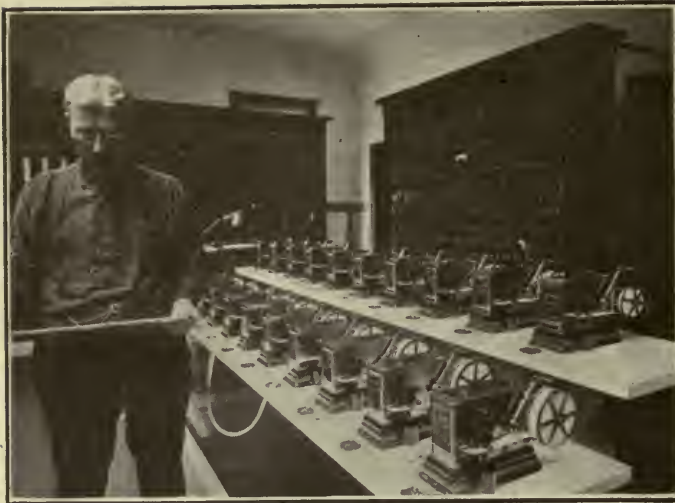


**NEW \$50,000 FIRE-PROOF FIRE ALARM HEADQUARTERS
AT PROVIDENCE, R. I.**

tribute them to the different boards and instruments, is included in the equipment. Each circuit is equipped with a lightning arrester and 1-ampere glass fuses. This board may also be used for telephone purposes when necessary. Five linemen sets are supplied, and when linemen are out searching for trouble they are able to keep in touch with the central office thru this board.

There are four charging boards which keep the battery for the 72 circuits up to prime efficiency. All the boards are mounted in cabinets and wired with asbestos-covered, slow-burning wire. The tapper and gong circuits are equipped with a multiple key for sending out signals simultaneously over all the circuits. Three transmitting devices are provided so that three special signals can be sent out over all tapper and gong circuits simply by turning a switch.

The tapper and box circuits are equipped with a recording set in the superintendent's office consisting of two punch registers to record the signals which are sent out over the tapper lines and those received on box



BANK OF TWENTY GAMEWELL PUNCH REGISTERS MOUNTED ON ITALIAN MARBLE. EACH REGISTER IS NUMBERED TO PREVENT ERRORS

circuits. These act as a permanent record to prevent dispute on the correctness of the signals which are sent out and received. They are equipped with take-up reels, which keep the records in a convenient form, and with automatic time stamps.

A metallic indicator shows whether any given piece of apparatus is in or out of the engine house. This is manually operated and has a capacity of sixty pieces of apparatus.

The current for the system is supplied by a battery of 1,952 cells. Each battery is mounted on metal racks and housed in a separate room. A manual transmitter is provided for sending out alarms at slow or fast time. The box circuits are timed at one second between blows, the gong circuits are on two-second time, and the taper circuits on one-second time. Free passage of fire apparatus thru the congested districts of the city is assured by a street-crossing transmitter box. Signals can be transmitted simultaneously to six different sections if desired.

Proportional Representation in Canada and Ireland

By Clarence G. Hoag

Secretary, American Proportional Representation League

THE cities of Vancouver and Victoria, British Columbia, have both voted to adopt the Hare system of proportional representation for the election of their councils. Vancouver, which has a population of about 100,000, is now the largest city on the continent to use the proportional system.

On January 15 the Hare system of proportional representation was used for the first time generally for Irish local elections, no less than 127 Irish municipalities electing their councils or other "authorities" by the Hare system of proportional representation on that day. Before that time only one Irish city, Sligo, had used the new system.

It seems surprising that any election system whatever could give satisfaction to all parties in Ireland at the present time.

Yet the Hare system did just that, as is indicated by passages from newspapers representing the Unionist, the Sinn Fein, and the Nationalist parties.

The Hare system of proportional representation is prescribed in the new Home Rule Bill for Ireland, the text of which was made public in England on February 28th. The bill prescribes two parliaments, one for Southern Ireland, the other for Northern Ireland. Section 13 prescribes the election of the members of each of these parliaments by the Hare system of proportional representation. Under the scheme of districting provided, the number of members elected proportionally from each district is from three to eight. After either parliament has been in existence for three years, it is to have power, according to the bill, to change the system if it desires to do so.

Filtered Water Rids City of Typhoid

Number of Typhoid Cases in Trenton, N. J., Reduced from 343 in 1907 to 28 in 1918

By A. S. Fell, M. D.

Health Officer, Trenton, N. J.

THE unqualified benefits of the filtration and sterilization of public drinking water supplies is admirably shown in the case of Trenton, N. J., which not many years ago had the reputation of being, for its size, one of the worst typhoid-ridden communities in the country. For many years efforts were made to secure a filtration plant for the city, but without result.

In 1911, when commission government began in Trenton, one of the first things accomplished was the construction of a modern filtration plant. Pending the building of this plant, the water was sterilized with hypochlorites. There was, of course,

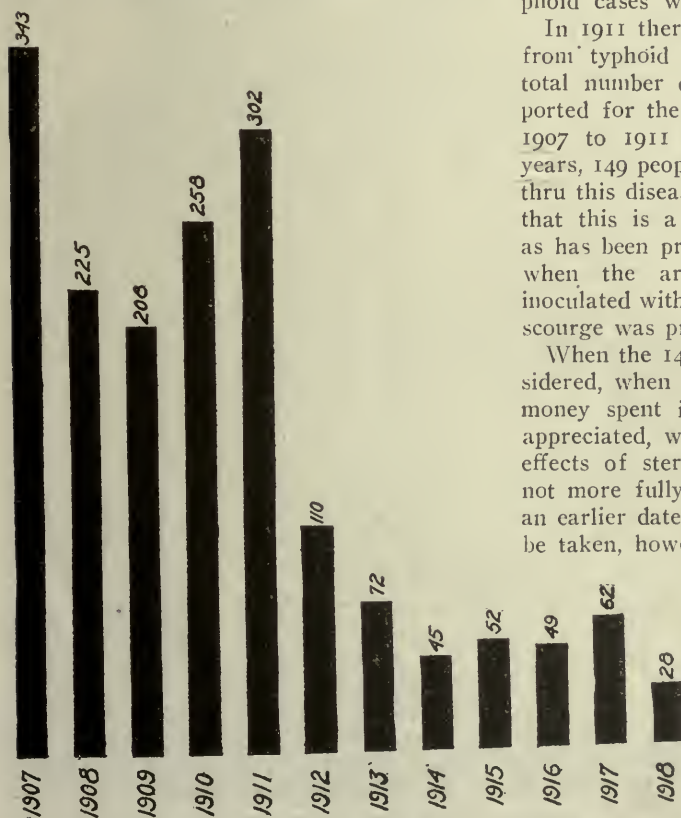
some objection to this on the ground of taste, but these protests soon subsided. Almost immediately upon the installation of sterilizing apparatus, the number of typhoid cases dropped. In 1911 there were 302 cases, while in 1912 after the installation of sterilization the number of cases dropped to 110. Since then the number has decreased almost continuously, and in 1918 but 28 cases were reported during the entire year.

The graphical presentation prepared by the engineering department of the city and reproduced herewith shows at a glance just what sterilization and filtration have done for Trenton in reducing the number of typhoid cases within the city.

In 1911 there were 32 deaths in the city from typhoid alone—four more than the total number of cases of this disease reported for the entire year of 1918. From 1907 to 1911 inclusive, a period of five years, 149 people lost their lives in Trenton thru this disease of filth. It is well known that this is a wholly preventable disease, as has been proved during the recent war, when the armies of the world were inoculated with anti-typhoid serum, and this scourge was practically eliminated.

When the 149 deaths mentioned are considered, when the loss of time, energy and money spent in combating the disease is appreciated, we wonder why the beneficial effects of sterilization and filtration were not more fully appreciated and secured at an earlier date. There is one more step to be taken, however, to completely wipe out

typhoid fever from all communities, namely, the voluntary or compulsory immunization of all citizens of susceptible age. In this manner the dread typhoid carrier will be eliminated and the focus of the disease cast out.



NUMBER OF TYPHOID CASES PER YEAR IN TRENTON, N. J.

An Experiment in Tenement House Reform That Has Justified Itself



THE PHIPPS MODEL TENEMENTS, NEW YORK CITY

Representing an investment of \$1,000,000, planned to earn 4 per cent, the earnings to be invested in other tenements. The court space is open to the street and used for recreation. There is a playground on the roof

Pavement Construction in Nashville

City Forces Lay Bitulithic, Redressed Granite and Creosoted Wood Block Pavements Economically

By William W. Southgate

City Engineer, Nashville, Tenn.

ON account of unsettled labor conditions as an aftermath of the construction of the great U. S. powder plant a short distance from this city, it was late in the season in 1919 before street construction got under way. The Board of Commissioners made appropriations early in the year for street paving work of considerable magnitude. The specifications were prepared, and a letting based thereon was held by the Board about May 15, for 49,000 square yards of bitulithic pavement on macadam foundation, 29,000 square yards of recut and redressed granite blocks, and 3,225 square yards of wood block pavement. The bids exceeded the engineer's estimate and the appropriations on all of

the types of pavement except the creosoted wood block, which was let at \$4.75 per square yard, including a 6-inch concrete foundation. This forced the Board of Commissioners to undertake with its own forces the construction of the bitulithic pavement and of the recut and redressed granite block pavement. Very considerable amounts of both pavements have been constructed by city forces, and up to the present time we find that the cost thereof is well within the estimates.

Laying Bitulithic Pavement

The city owns its bitulithic mixing and paving plant, and the pavement was laid under patent license fees. This city is favorably situated for the economical construc-



THE MUNICIPAL BITULITHIC PLANT OF NASHVILLE, TENN.

This plant is centrally located at the top of the bank of the Cumberland River adjacent to railroad sidings. The city stone crusher is seen at the left. River gravel and sand come in by boat, are elevated into the storage bins and delivered by gravity to the mixing plant. Fuel oil is used for heating the drums. The whole plant is driven by electric power from the municipal electric light and power plant

tion of bitulithic pavement, on account of peculiar local conditions. The old roadways were constructed of Telford macadam and hence afforded an excellent and perfectly stable base for the foundation. Nashville is located on a limestone geological formation, thus providing an abundance of superior quality limestone which can be quarried and crushed at reasonable prices.

From long experience and observation of the behavior of bituminous pavements laid both over a concrete base and over a well-constructed macadam base, this department has concluded to abandon the use of a concrete base for bitulithic and other types of bituminous pavements. The reason for this conclusion is that bitulithic actually "stays put" on a macadam base very much better than on concrete. The excessively severe pounding of modern heavy automobile trucks seems to exceed the resiliency of the bitulithic wearing surface when founded upon concrete, because concrete is rigid and comparatively inelastic and therefore fails to absorb any of the shock of impact from heavy auto trucks. The consequence is that this severe pounding either crushes down some of the particles of stone in the bitulithic wearing surface or else squeezes out the bituminous cement and causes numerous depressions and a corrugated surface. On the contrary, a properly prepared macadam foundation is quite elastic. It absorbs a considerable portion of the shock of heavy auto trucks and does not throw the entire burden of impact upon the bitulithic wearing surface. Hence its limit of resiliency is not exceeded. This peculiarity has been several times demonstrated by the fact that the same bitulithic mixture when laid upon a macadam base stands up very much better under identical conditions of traffic than when founded upon a concrete base.

Use is made of the old macadam roadway surfaces to the fullest practicable extent for a foundation for the bitulithic. The grades and crowns for the new pavement are adjusted so as to disturb the old macadam roadway bed as little as possible. Frequently the surface is merely scarified, and the depressions of old roadway surfaces are filled in. Then 2 or 3 inches of new macadam is spread and rolled and the bitulithic wearing surface laid. This method of construction results in very considerable economy.

An expert chemist is employed at the plant to make proper analyses of the asphaltic cements and to see that the mineral ingredients are properly graded, and that the bitulithic mixture is of the required quality and consistency before being carted to the roadway. The pavement is laid under the advice and counsel of an expert, furnished by the patentees. It is found that pavements laid under these methods are costing around \$2.00 to \$2.10 per square yard, including the preparation of the foundation and the patent license fees. The first of the bitulithic was not laid until about the 1st of August, 1919, and hence only about 20,000 square yards were laid.

Redressed Granite Block Pavement

The old granite pavement was founded upon a perfectly stable macadam base. The old blocks were recut on the roadways and temporarily stacked up on the sidewalks for handling. The blocks were cut by expert granite cutters under a contract at a cost of 90 cents per square yard. The method used was to cut the blocks at right angles, crosswise to their lengths, and usually resulted in two smaller blocks for each old block with new heads or paving faces. The blocks were neatly dressed so as to lay with joints not exceeding $\frac{1}{2}$ -inch in width. From experience and observation this department concluded that one of the main causes for the unevenness and turtle-backed condition of the surface of the old blocks was the want of uniformity in the thickness of the old sand cushion, and the fact that the sand-bed shifted under the pounding of traffic, particularly so on sharp grades, and resulted in an uneven, disagreeable and noisy pavement under traffic.

To avoid the expense of a new concrete foundation it was decided to utilize the old macadam base and to overcome the trouble from the shifting of the sand-bed by substituting a cinder concrete cushion upon which to bed the recut blocks. This cinder concrete cushion was proportioned and mixed in a dry state, one volume of Portland cement, $2\frac{1}{2}$ volumes of sand, and 5 volumes of steam furnace cinders crushed and passing a 1-inch screen. The cushion was prepared and spread in the dry state immediately in advance of the granite setters as the work progressed. The granite block setters had no trouble whatever in bedding



RELAYING AND WETTING DOWN REDRESSED GRANITE BLOCK PAVEMENT

the blocks on this dry concrete mixture and made no complaint about any trouble in manipulation.

When the blocks were laid, water in sufficient quantities to cause the concrete to properly set was sprinkled over the surface of the granite blocks by a garden hose. The quantity of water necessary was determined by frequently lifting up blocks here and there to inspect the cinder concrete bed. Immediately after sprinkling, the blocks were brought to an even surface by a solid cast-iron hand-roller manipulated by four or five men. Then the mastic filler, composed of approximately equal volumes of hot paving pitch and dry warm sand, was flushed over the granite pavement until all open joints were filled and a slight excess of paving pitch remained on the surface. Dry, suitably-graded pea gravel was then spread over the surplus mastic while still hot, forming a gravel mastic mat coat or carpet over the granite pavement as a top dressing. This afforded a good, gritty foothold for draft animals and produced a quiet pavement.

The contract for setting the blocks was let to expert granite setters at 50 cents per square yard. The city furnished all materials, delivered at the site of the work. This method of bedding granite blocks is probably novel. Each block is rigidly held fast in a concrete matrix like a tooth in a jaw-bone and cannot tip or shift under traffic. The cost of bedding the granite blocks on this cinder concrete cushion was about 40 cents per square yard for the

component materials. The cost of spreading and manipulating the dry cinder concrete and applying the mastic filler was included in the contract price for setting the granite blocks.

The total cost of the granite pavement amounted to about \$2.75 per square yard under this method of construction. New granite blocks would have cost the city \$2.25 per square yard f. o. b. cars, Nashville, hence the economy of recutting and utilizing the old granite blocks.

Creosoted Wood Block Pavement

Bids were taken alternately for plain creosoted wood blocks and for kreolite lug block, with treatment, 14 pounds per cubic foot. The price was identically the same; so on account of the rather severe cross-fall in the roadway and the decidedly better foothold to draft animals afforded by the kreolite lug block, the latter was selected.

The blocks were laid on a 6-inch 1, 3, 6 concrete base, which was very carefully gauged, screeded, and flushed with a creamy mortar, and troweled true to the contour of the pavement, and was then allowed to properly set up and dry out. Immediately in advance of the laying of the block, the concrete base was heavily mop-coated; the blocks were bedded in the hot paving pitch and were then treated with a suitable paving pitch filler. This method resulted in an excellent wearing surface, and it is believed that the trouble from absorption of water by the wood blocks and the consequent buckling and heaving has been overcome.

The Latest English Housing and Town Planning Legislation

By Frank Backus Williams

ENGLAND in her housing and town planning legislation is becoming more and more mandatory and socialistic. In the recent amendments to her "Housing, Town Planning, etc., Act, 1909," "Housing, Town Planning, etc., Act, 1919," and Housing (Additional Powers) Act, 1919," she supersedes the clause in the older law empowering local authorities to do necessary housing and town planning, by clauses compelling them to do so, incidentally enlarging their already considerable powers to that end; and also agrees to pay, with state funds, a portion of any loss they may suffer in so doing; and grants individuals a subsidy on houses built. This is written in no spirit of criticism. The failure of local authorities to undertake essential housing, and the apparent impossibility of obtaining anything like sufficient private funds for the purpose, in this crisis, seem in England to have left no other course open.

The housing provisions in this recent legislation make it the duty of the local authority to prepare within three months a scheme adequate to the local needs for the housing of the "working classes," which has been held to mean, in this connection, those of limited means and for slum clearance schemes when necessary. These schemes, when approved by the national authorities, the locality must carry out within a reasonable time. If the local authority fails to perform either of these duties, the national authorities are given the power to act in its stead and at its expense. Any loss to be suffered by the locality the nation repays in full less the proceeds of a tax to be levied by the locality, or a penny (two cents) in the pound; or, in the case of housing by the county of its employees, the nation pays 50 per cent of the annual loan charges until April 1, 1927, and 50 per cent thereafter. Powers are conferred upon localities and their previous powers increased to borrow, to acquire, sell, lease and develop land, providing for incidental industries and the amenities, and to lend to individuals, to assist limited-dividend cor-

porations, for low-price housing, and garden city developments, etc.

The Minister of Health is empowered to make grants not to exceed in the aggregate £15,000,000 to persons constructing suitable low-priced houses within twelve months. Building operations which interfere with the provision of new dwellings, and the demolition of existing dwellings, may be forbidden.

Grave as the crisis is, England has not forgotten the lesson taught by the war, that dwellings and their surroundings must be pleasing in appearance. The law requires that schemes for housing shall take into account, and so far as possible preserve, existing erections of architectural, historical or artistic interest, and shall have regard to the natural amenities of the locality. The state may also require for the work the selection of an architect from a panel of the Royal Institute of Architects.

In the provision for compensation for slum areas and buildings condemned, England has adopted the principle, which, starting in its novelty and radicalism as it seems to us, has long been a part of one or two housing laws of continental Europe, that improvements, so called, which are so unsanitary as to be unfit for use, according to existing standards, should not be paid for. The amount to be given the owners of land and buildings condemned in such cases "shall be the value at the time the valuation is made of the land as a site cleared of buildings and available for development in accordance with the requirements of the building by-laws for the time being in force in the district;

"Provided that if in the opinion of the Local Government Board, it is necessary that provision should be made by the scheme for the rehousing of persons of the working classes on the land or part thereof, when cleared, or that the land or a part thereof when cleared should be laid out as an open space, the compensation . . . shall be reduced" in accordance with certain provisions of the act.

In town planning, as in housing, the recent legislation changes optional provisions into mandatory ones, and local authorities with a population of over 20,000 are now required to prepare planning schemes within three years, submit them to the national authorities, and carry them out, on pain of having the nation act for them at their expense. Readers of this magazine will remember that the French planning law, recently enacted, is similar in this respect. In Canada, with the exception of Nova

Scotia, in our own country, and as proposed in Australia, planning legislation is permissive. In Nova Scotia, too, a locality may establish minimum requirements, instead of detailed special plans. Universally, however, in Canada and Australia, as in England, on the continent of Europe, and in civilized countries generally except our own, the resources of the state and nation are to a greater or less extent used to promote housing for people whose means are limited.

"Better Times"

One of the most potent non-political civic influences in New York City has recently been strengthened by the joining together of forty-four settlements. The new organization is known as the United Neighborhood Houses of New York, and has offices at 70 Fifth Avenue.

The work of these houses for civic and community betterment has lately been brought sharply to the attention of the public thru a monthly periodical called *Better Times*, which claims to be the smallest newspaper in the world. As the official spokesman of the United Neighborhood Houses, it promises to be an interesting reflection of new city-wide movements, for in the settlements have originated numerous discussions that resulted in the cleaning up of tenements, the adoption of more stringent health regulations, better lighting and paving of streets in the foreign and congested districts.

Introducing itself in its first issue, *Better Times* states that it will devote itself to social progress. It will keep the outside world informed of the

Americanization, city-wide health work and coöperative enterprises in which the neighborhood houses are engaged.

Extra

Better Times

SMALLEST NEWSPAPER IN THE WORLD

PRICE
5c

Vol. 1, No. 2

Published Monthly by the United Neighborhood Houses of New York

Feb. 1920

Neighborhood Houses Urged as New York War Memorial; Settlement Work Commended by Prominent Citizens

Appeal for Greater Support

A group of prominent men and women have issued a statement endorsing the settlements of New York as "valuable stabilizing forces in these critical times of unrest," and urging the public to give them greater support.

Charles E. Hughes, Henry Morganthau, George Gordon Battle, Felix Warburg, Thatcher M. Brown, Henry W. Taft, Dr. Katharine B. Davis, Henry P. Davison, Franklin Giddings, Herbert Parsons, James Speyer and Arthur Williams are the signers of the endorsement, which reads:

"The settlements of New York have for years been doing a work of Americanization. By planting American homes in the centers of foreign population, by



THE WONDERFUL STORY

training in self-government classes of young people, by classes in English and Citizenship and in many other ways they have developed ideas of community service. They have interpreted American institutions and upheld American ideals. Neighborhood and community organization has been the aim of the settlements from the first. Present

movements along this line received their impulse from the settlements long before these ideas were appreciated for their true worth by the public at large.

"For these reasons we believe the settlements of New York City, strategically situated in neglected neighborhoods and among our foreign neighbors, should be adequately supported. (Cont. on p. 2)

Survey of the City Being Made

Neighborhood houses have been suggested as a fitting war memorial for this city by the United Neighborhood Houses of New York. The New York Community Service, at the suggestion of the United Neighborhood Houses is making a survey of the city to determine where the need for more neighborhood houses is greatest. The following letter was recently sent to Mr. Rodman Wana-maker, chairman of the Mayor's Committee on a Permanent Memorial to Soldiers:

"We venture to bring your attention to a vital need, the meeting of which will not only be a fitting memorial to the patriotism and loyalty of those who gave their all for the high ideals of democracy, but

Fundamentals in Municipal Accounting

By Lloyd Morey, C.P.A.

Comptroller and Assistant Professor of Governmental Accounting,
University of Illinois

THE general purpose of accounting—that most important adjunct of every enterprise either public or private, where finance is involved—has been stated as being “to produce complete, accurate and prompt information about business transactions and results.” Of municipal accounting the purposes may be more particularly analyzed under these heads:

1. *Record*:—the complete, accurate, and permanent recording of public financial transactions

2. *Security*:—the controlling and safeguarding of public funds and properties

3. *Administration*:—the presentation of facts essential to administrative guidance

4. *Responsibility*:—the localizing of the responsibility for every official act

5. *Efficiency*:—a means of checking and comparing the results obtained by the various department heads

6. *Publicity*:—the complete accounting to the public for the stewardship entrusted to the various officials by it

These important functions call for adequate and well-devised systems of accounting and business procedure, certain fundamentals of which are, I believe, paramount and of general application, and worthy of our present consideration.

The Budget

The first step in the establishment of a proper system of business and accounts is the budget, the heart of every good system of public accounts. The Illinois statute requires that cities adopt an annual budget. What a godsend it would be under present conditions if the constitution of the United States made the same requirement of Congress!

A budget to be really effective must be complete, a “balanced statement of revenues and expenditures,” a complete financial program for the year. Recent Illinois legislation extended somewhat the liberties as to emergency appropriations during the year. Altho believing that the conditions which led to the enactment of these laws were sufficient to make them necessary, the writer warns against too much development of this idea. The financial program for the fiscal year should be fully expressed

in the annual budget, which, making a reasonable allowance for emergency, should be lived within.

Every public budget should, in my opinion, be prepared by or under the direction of the executive, and be submitted by him and with his recommendations to the legislative body, which must properly have final jurisdiction. In the case of municipalities, this would place the responsibility of the preparation of the budget on the mayor, who would obviously depend very considerably in this respect on his chief financial officer.

In the matter of appropriations, there has been much diversity as to method. Appropriations have sometimes been made in great detail, and usually under such circumstances have worked considerable hardship. Other appropriations have been made with woeful absence of detail either in the estimates or in the final form of the appropriation. A reasonable medium between these two extremes, neither of which is conducive to the most economy or the most satisfaction in administration, is to be noted in recent budgets. No appropriation, in my opinion, should be made except on the basis of properly itemized estimates. On the other hand, appropriations should comprehend various activities and allow reasonable leeway in expenditures for the various items. In other words, the best form of appropriation from the standpoint both of the department head and of the administration in general, is a lump sum appropriation based on itemized estimates, and with accounting machinery which provides a check to see that expenditures are made in general accord with the estimates and that funds are not materially diverted from the purposes for which they are appropriated.

Development of Accounts

After the budget has been adopted, the next important step is the development of accounts with revenues and appropriations. Cash accounts, quite often found to be the only accounts maintained, are wholly inadequate.

quate. "Revenue" comprehends the total amount of funds accruing from general sources during a fiscal period, whether or not these funds have been fully collected. Expenditures, on the other hand, include all costs incurred on account of a given fiscal period. Accounts which will reveal these facts are the only accounts which can be compared as to various periods with accuracy and satisfaction.

Accounts with revenue will consist of estimates set up from the estimates included in the budget, and credits to these estimates as the revenues are realized. Accounts with appropriations must show more than the mere amounts appropriated and the warrants paid on account of them. The Illinois statute limits the authority of department heads or officials to contract beyond the amount appropriated. In order to make certain that this requirement is carried out, there must be a centralized accounting and purchasing control, and accounts with appropriations showing all encumbrances resulting from orders or contracts placed. Appropriation accounts will be adequate and complete only if kept in this way, and the importance of these facts in the general financial statements will be at once evident.

Expenditures Should Be Classified

An additional important feature of the appropriation accounts is the classification of expenditures. A uniform, complete and continuous classification of expenditures is of the utmost importance for purposes of budget making and of general administration. Uniformity must be applied among the departments in the classification of items, and as between successive periods. A comprehensive classification of expenditure involves a three-fold distribution:

- (a) By departments
- (b) By items
- (c) By unit costs as practicable

Departmental classification still varies greatly, in spite of numerous proposals for standardization. A uniform departmental classification in all cities would be of the utmost value. Classification of items should be uniform as far as possible among the various departments. It should not be too extensive and should be capable of further expansion. The Illinois state classification applied to all institutions and departments of the state for the last five years is worthy

of notice: salaries and wages, office expense, travel, supplies, repairs, equipment, and contingencies.

In addition to the accounts with revenues and appropriations, it is important that a complete set of capital accounts, or accounts with property and debt, be maintained. Accountants have long recognized, and city officials are coming to understand, the value of showing balanced capital accounts. Detailed records of all kinds of property are essential for purposes of fidelity, ownership, and maintenance. These records will consist of detailed inventories, the totals of which appear in general accounts and in the capital balance sheets. Proper accounts with assessments, sinking funds, etc., belong to this group.

There is an increasing tendency in this country for municipalities to take over public utilities. Whenever this is done, it is of the utmost importance that an adequate and comprehensive accounting system be applied to these utilities from the outset. Public operation of utilities may or may not be a good thing. It is essential that wherever it is undertaken, a complete system of accounts be maintained, in order that all facts connected with the operation of the utility from its beginning may be at all times fully available.

Regular Financial Reports

In addition to the importance of adequate municipal accounts, some fundamentals of which have been suggested above, I wish to stress the importance of regular and comprehensive financial reports. Governmental reports fall generally into two classes:

- (a) Administrative reports for the use of officials
- (b) Public reports for the information of the general public

Administrative reports should be frequent, at least monthly, and should be detailed as to budget, funds, properties, etc. Public reports should be prepared at least annually and should contain: (1) a readable summary which will acquaint the average citizen with the facts; (2) the necessary financial statements. These statements should include:

- (a) A complete balance sheet or statement of assets and liabilities, including current and capital assets, liabilities, authorizations and reserves
- (b) Statements of revenue and expenditure, revenue being classified by

sources, and expenditure by departments and under such other general analysis as is practical. A chronological list of warrants issued is an exceedingly inadequate statement of expenditures

- (c) Statements showing comparison with other years
- (d) Detailed statements of property, indebtedness, and sinking funds

In this connection, attention should be called to the value and importance, not only in respect to published reports, but in respect to accounting in general, of regular audits by certified public accountants. Such audits should be a part of the procedure of every municipality, as well as every governmental unit.

To summarize, the following are suggested as the essentials of an adequate municipal accounting system:

- 1. A complete budget
- 2. Accounts with revenues and appropriations
- 3. Capital and fund accounts

Will You Help in the Special-Library Census?

AT a time when the Government is counting up its inhabitants, the Special Libraries Association is enumerating the special library collections of the country, because there does not exist at present an adequate directory of special libraries.

Business men realize what it means not to have a directory of manufacturers at a time when they wish to purchase a particular machine—and have no other way to go about it. The city librarian is in just such a position when he or she is investigating a particular subject. Would it not be simpler if he or she knew of another library that had specialized on subjects of that type, and which had probably gone over the same ground?

In the spirit of coöperation, and in order to list the special information sources of the country, the Special Libraries Association—the national body of special librarians—submits the following questions and respectfully asks you to take the trouble to answer them. When compiled, the directory will not be used as a mailing list for advertisers, but merely for the purpose stated, viz., to have in a central place a

4. Balance sheet reports

These are not new ideas, but they are fundamental and not yet commonly carried out. We should apply the same principles to public business as to private affairs. City officials can be of genuine service to both the present and the future public by establishing good business and accounting records and procedure. In these troubled times, not the least among the factors contributing to the high cost of living and its attendant unrest is the high governmental expense with consequent high taxes. The public is naturally and properly more and more critical of expenditures for purposes of Government. Nothing will do more to aid in reducing these expenditures if they are excessive, or in substantiating and justifying them if reasonable, than a sound and comprehensive system of public accounts.

ACKNOWLEDGMENT.—From an address delivered before the Illinois Municipal League, at Springfield, Ill., January 30, 1923.

record for the special information sources of the country.

A "special library" has been defined as:

"A good working collection of information upon a specific subject or field of activity; it may consist of general or even limited material serving the interests of a special clientele; and preferably in charge of a specialist trained in the use and application of the particular material."

If your library comes within the above qualifications the S. L. A., will appreciate the following information from you:

- 1. Name of institution or company
- 2. Name by which library is known
- 3. Name of librarian or custodian
- 4. Can it be classified as any of the following: financial; business; legal; engineering or technical; institutional; municipal; reference; agricultural?
- 5. If not, how can it be classified?
- 6. Does it serve a special clientele?
- 7. Would your librarian be willing to assist other special libraries to a reasonable extent?

The above data should be sent to Wm. F. Jacob, Chairman, Library Census Committee, care General Electric Company, Schenectady, N. Y., who will be glad to answer any questions relating thereto.

Forward Steps

Reported to *THE AMERICAN CITY* by *Municipal Officials & Department Heads*

Finance Departments

Converting a "Tax Sale" from a Liability Into an Asset

SOUTH VANCOUVER, B. C.—The method adopted in the municipality of South Vancouver for advertising a recent "tax sale" may be of interest to other cities which face the task of collecting overdue taxes.

A tax sale may not appear, to some, a good advertisement for a municipality, but, as Commissioner, I conceived it to be in the best interests of the public to let them know just what we had in South Vancouver, and I was able to give statistics which would go far to correct the impression which a tax sale might create.

We put into the advertisement the total number of public and high schools, the value of these and of other buildings, the total number of pupils in our schools and the number of teachers, the number of street lights and water services, the miles of paved streets, macadamized streets and other streets, the street railway, water-main and sewer mileage, etc. We also stated what the Dominion Government was doing towards the dredging of the north arm of the Fraser River, which for over four miles traverses our southern boundary. The number of our industries was pointed out, and attention was drawn to the fact that we had a good many desirable sites for other industries besides those already established. We explained the geographical position of the municipality, pointing out that a stranger coming out of the city of Vancouver into South Vancouver would not know that he had crossed the boundary line unless some one told him. The city of Vancouver has a population of about 115,000, while that of the municipality of South Vancouver is 30,000.

This information given by means of advertisement and the comment which the advertisement evoked came as a surprise to many of the South Vancouver people themselves, who had not grasped the extent to which the amenities of civilized life had been provided, nor our opportunities for development and expansion. This advertisement, clear and comparatively brief, not only drew the attention of the general public to the facts in connection with the municipality, but was an inducement for non-residents who own South Vancouver property but had not kept in close personal touch with the place to pay up arrears of taxes.

The advertisement ran for a week, and it was followed by a smaller-space advertisement giving supplementary facts, until the day before the sale began. Experience has taught us that with advertising reiteration is as effective as it sometimes is in rhetoric.

We have every reason to be satisfied with the results. Thus far we have obtained in arrears of taxes, as a result of the sale and otherwise, over \$410,000, and we actually sold 1,000 parcels.

When I came here as Commissioner, appointed by the British Columbia Government, the floating indebtedness of the municipality was, in round figures, half a million. I consolidated this indebtedness in the bank and paid off all the small creditors. Prior to this time arrears of taxes were piling up at 50 per cent per annum. For example, in 1917 the levy was scarcely half met when the year expired; during the eight months of 1918 when I held office the receipts were but 55 per cent of the levy. During 1919 80 per cent of the current taxes was received. The previous tax sale held in this municipality—in 1915—(there was no other until last fall) was advertised in the usual cold, unattractive way, without any special features, with the result that only about \$40,000 worth of property was sold to the public.

South Vancouver deserves good advertising. It is beautifully situated, the northern part sloping towards Burrard Inlet, and the southern part towards the north arm of the Fraser. It contains $14\frac{1}{2}$ square miles, and every bit of it is suitable for suburban homes. It houses a great many of the industrial workers of the city of Vancouver. We therefore had fine material from which to compile an attractive advertisement. The press was not slow to grasp the fact, and with general editorial comment enlarged the bounds of our advertising contract. It gives me pleasure to testify to the value of a public-spirited press in initiating and supporting any movement for spreading knowledge useful and stimulating to municipal progress.

F. J. GILLESPIE,
Commissioner.

Park Departments

How One Progressive City Makes Use of Its Park Facilities

BLOOMINGTON, ILL.—On the south side of the city of Bloomington lies Miller Park, one of the city's beauty spots and its chief recreational center. The park is equipped with a zoo of the best type, a pavilion which has been declared to be one of the best in the country, a band-stand, playgrounds for

the children, picnic grounds with an ample supply of tables and benches which are freely used by both the children and the grown-ups, boating facilities and bath houses. All these are arranged conveniently and attractively, and the entire park is beautified with shrubbery, plants and flowers, and in summer especially presents a most pleasing picture.

At the end of the Miller Park car line one is greeted with an attractive entrance and a flight of stone steps leading to the main walk. The visitor is impressed at once with the beauty of the place, its large outspreading trees, its well-kept lawns and artistically arranged flower beds and shrubbery. A short distance from the main entrance is an imposing monument erected to McLean County's war heroes. Further south and on the same side of this central walk is the band-stand, surrounded by comfortable benches capable of accommodating hundreds of people. During the summer months band concerts are an added attraction to the park, and the band-stand furnishes a suitable platform for speakers who appear on programs at picnics and other gatherings. Near-by is the large picnic ground, a most popular place where picnic suppers are held by families, neighbors and larger gatherings.

At the end of the central walk, and on the north shore of the lake, stands the pavilion. Nature seems to have provided this location especially for such a structure. The land in front of the building



THE PAVILION IN MILLER PARK, BLOOMINGTON, ILL.



BATHING BEACH AND BATH HOUSES IN MILLER PARK

slopes gently down to the water's edge. A wide veranda extends around the entire building. On the south side, overlooking the lake, this veranda widens out and assumes the proportions of a large balcony. Here one gets a wonderful view of the lake and the south side of the park. Just off this balcony is the refreshment room, and in the west end of it is a small museum in which are many mounted specimens of birds and animals.

A small balcony, large enough to accommodate an orchestra comfortably, is built above the refreshment room, and on the floor above is a large dance hall with cloak- and dressing-rooms built at the north end. In the basement, the floor of which is on a level with the ground at the south side of the pavilion, are the lavatories.

To those interested in aquatic sports one of the most interesting features is the bathing beach with its equipment of appropriate apparatus. Two large bath houses have been constructed on the west shore of the lake, with diving platforms, springboards and ladders. The beach extends around a portion of the north shore, and here a place has been fenced off, so that the little tots, too small to venture in any but shallow water, may wade. In winter the lake furnishes an admirable place for skating, and thousands have made good use of the ice for this winter sport. As a precaution against accident, skaters are not allowed on the ice until it reaches a thickness of six inches.

Only a short distance north of the bath houses is the large zoo, or animal house,

a place which is visited both winter and summer by large numbers of people. The building was erected only a few years ago. It is made of brick and stone, with the cages on the south side arranged so that in mild weather the doors can be raised and animals permitted to sun themselves. Here are housed African and Mexican lions, leopards, tapir, llama, porcupine, ostrich, monkeys and birds of many varieties. Other attractions at the zoo are many varieties of bear, two species of deer, buffalo, elk, angora goats, etc.

At the south of the lake are about twenty acres of original forest, with drives built thru it. This opens on a highway along which is a blazed trail, and the coming season the park officials plan to build an archway with the word "Welcome" at the entrance, and to construct ovens so that automobile tourists may find a haven of rest where they may prepare their meals and camp for the night.

Like other public parks, Miller Park has a certain amount of revenue from its various concessions and attractions. This accrues from boating, bathing, fishing, dancing, an electric piano, refreshment concessions and miscellaneous sales, which include the disposal of various salvaged articles. This matter of revenue furnishes another concrete evidence of the growing popularity of the park. The receipts for the year 1919 nearly doubled those of the previous year; the receipts for 1918 amounted to \$4,902.46, and those of the past year totaled \$7,991.30. These were divided as follows: boating, \$3,066.75; bath-

ing, \$3,494.11; fishing, \$324.60; dancing, \$480; piano, \$203.50; refreshment concession, \$1,250; miscellaneous sales, \$172.34.

One method of cutting down the expense of the park maintenance has been the cultivation of an extensive garden by the custodian. This supplies vegetables and other green stuff for that part of the zoo which requires it, and eliminates the expense that would otherwise be incurred in the purchase of this food on the market.

JOHN G. WELCH,
Commissioner of Public Property.

effectively. At first the recipients were inclined to be haughty because they were unaccustomed to the standard of safety and cleanliness that the present city administration is enforcing, and occasionally a prosecution is necessary before the offender respects the law. In most cases, however, the warnings are sufficient.

GERARD ALAN ABBOTT,
City Manager.

City Managers

Warning Citizens of Ordinance Violations by Cards

OTSEGO, MICH.—The sending out of printed forms covering in the briefest possible manner notices of violations of city ordinances has proved most effective in Otsego in securing abatement of the conditions complained of. We use

Name	Name
Address	Address
Date	Date
Nature of objection	A FIRE HAZARD
	exists in connection with
	and deserves your immediate attention.

	Officer

Name	Name
Date	The Premises at.....St.
Unsanitary condition	Are Not Sanitary.....
.....	To Safeguard the Health of Otsego.....
at	You are notified this.....day of.....
Cause	To

	Officer

ABOVE: Notice of fire hazard

AT LEFT: Notice of violation of health ordinance

BELOW: Notice of violation of motor vehicle ordinance

three different colors for the cards, the notice of the fire hazard being red, the notice of a violation of a health ordinance being white, and that referring to the violation of the motor vehicle ordinance lavender. These warnings operate most

Name	License.....
Make of Car.....	Name
.....	You are cautioned against further violation of the
License.....	City Ordinance with reference to.....
Date .....	.....
Nature of complaint	Date.....

	Officer

ing of bridges, additional paving, the improvement of several miles of streets, the extending of the city's sewer and water system, the introduction of modern methods of disposal of garbage, the erection of new ward and high schools, the enlargement and beautification of park and playground areas, the complete motorization of the Fire Department, and a new City Hall.

It is estimated that these improvements will cost \$2,500,000, and will take a period of three years. The motorization of the Fire Department has already been accomplished. The city now has two fire stations and maintains a department of twenty men. The motor apparatus includes a combination hose and chemical, a hook and ladder truck, a 500-gallon pumper, and a chief's car.

The extension of the sewer and water system is now under way. Two and one-half miles of new water-mains and three miles of new sewer pipe were laid during the season of 1919, and a like amount of work arranged for the season of 1920, thus bringing a large portion of the city into a more sanitary and healthful condition. Two new bridges, one draw, and one bascule lift, are being built over the Manitowoc River.

Manitowoc has a rather unusual municipal public utility plant, which furnishes electricity for light, power, cooking and heating, and also provides water for the citizens. The water is obtained from deep wells sunk below the bed of Lake Michigan and is fed by springs with a continuous flow of water. The plant is equipped with modern machinery, having capacity sufficient to supply a city of much larger population. The equipment consists of two

1,500,000- and one 3,000,000-gallon pumps; one 1,500 k. w., one 750-k. w. and one 300-k. w. turbine generators. A rate of lighting maximum 8 cents to 3 cents minimum per k. w. h., and power maximum 5 cents to 1½ cents minimum, is charged for electricity. The city is one hundred per cent metered as to water services. The water is of fine quality; its purity is insured by annual chemical tests.

The public utilities plant is under the management of a Utilities Commission composed of five representative citizens who serve without pay. The term of service is three years.

The growth of population which has made necessary the increase in public facilities shows some interesting figures. The population in 1910, according to the U. S. census, was 13,037. In 1917 it had increased to 15,574, and by July 1, 1918, to 18,067, a total increase of 5,910. The gain since July 1, 1918, is estimated to be 4,000, bringing the total at the present time up to 22,000, estimated.

It is evident that the city has done wisely in instituting improvements which will provide for the comfort and welfare of the citizens for some time to come. Farsightedness and forehandedness are admirable municipal characteristics.

ARTHUR H. ZANDER,
City Clerk.



THE PUBLIC UTILITY PLANT IN MANITOWOC, WIS.

Departments of Education

A Municipal Loose-Leaf Social Service Directory

PHILADELPHIA, PA.—At the request of many social agencies and social workers a "Social Service Directory of Philadelphia" has been prepared for the use of those connected with social service work of organizations, institutions, churches, and city, state and governmental departments, and for the citizens of Philadelphia in general. The work was done by the writer of this item under the direction of the President Judge, Charles L. Brown, of the Municipal Court of Philadelphia.

The Directory is issued in loose-leaf form so that corrections and changes can be made from time to time and new organizations added. There are nearly 1,200 name references in the alphabetical name list, and more than 2,000 classified activities of social service organizations are collated in the subject index. These organizations include those dealing with families, relief, children, hospitals and other institutions, and also church social service, civic, religious and war service groups.

For every organization the following in-

formation is given: name, address, head worker, telephone number. Information covering organizations doing similar work is made uniform; for example, in the case of settlements all the separate settlement activities are listed and those which are common to all settlements are classified. Nothing is included which could be construed as propaganda for any particular institution or which would tell what the institution intended to do unless the plans were well under way. Only skeleton outlines of present activities are given, so that no institution is favored above another.

The matter of endorsement of any organization is left to the Chamber of Commerce. Therefore, the Directory includes, under "Philadelphia Chamber of Commerce," a detailed statement of the policies of the Charities and Welfare Bureau of that organization, which is the endorsing body in Philadelphia. All out-of-town organizations which give service to the people of Philadelphia are listed.

The loose-leaf form is expected to be of great assistance in facilitating revision of the Directory. Our plan is to revise it in two ways: by sending minor corrections in typewritten form to the subscriber from time to time; and by reprinting the book page by page as that becomes necessary.

LEON STERN,

Supervisor, Educational Department, The Municipal Court of Philadelphia.

Water Company Appreciates Responsibility to the Public

AS a means of keeping before the citizens of Terre Haute, Ind., the fact that it appreciates its obligation to provide an adequate supply of pure water for the consumers, the Terre Haute Water Works Company has made use of the advertising columns of its local newspaper, as shown on page 375.

On March 20, the company sent out to prominent citizens—officials, physicians, educators, and others—a circular letter with a blue print of curves showing that as the number of city water consumers in Terre Haute increases, the typhoid death rate decreases. The letter reads in part as follows:

One of the most valuable assets that a com-

munity can offer to its citizens, or prospective citizens, is the assurance that the public water supply is being well guarded and maintained at a high degree of purity. Possibly no better proof can be offered of this fact than a low death rate from typhoid fever, and it is for the purpose of conveying this information, that the enclosed blue print is sent to you.

As the number of city water consumers increases, the deaths from typhoid have decreased. During the ten years from 1909 to 1919, the number of city water consumers increased from 5,200 to 7,900, while the death rate from typhoid fever per 100,000 population decreased from 58.5 in 1909, to 5 in 1919. This is probably the most positive proof that can be offered as to the high sanitary condition of the city water supply.

The U. S. Public Health Service has fixed certain standards of purity for water furnished on common carriers. This specifies

A REPORT TO THE GOOD PEOPLE OF THE GOOD CITY OF TERRE HAUTE

It seems right that we, as the public water purveyors of the City of Terre Haute, should give an account of our stewardship. Therefore, we wish to advise—

That the U. S. Public Health Service has fixed a high standard of purity for water used by railroad companies whose lines pass from our state to another, and since each year certificates must be furnished showing that the water is up to the standard. These certificates were furnished in respect to the City Filtered Water of Terre Haute by the State Board of Health, January 22, 1910, July 24, 1913 and also January 15, 1920.

That we furnish a weekly report to the State officials and they make a personal survey of our plant and an examination of our methods of purification from time to time. At one of the recent visits, the Sanitary Engineer said that no filter plant in the State was more efficiently operated than the Terre Haute Plant.

That daily bacteriological tests were made of the natural and also of the filtered water in our own laboratory.

That visual examinations of the water are made every 30 minutes, or all times in 24 hours, and a record is made each time.

That the average filter efficiency, on seasonal reduction in 1919 was 95.5%.

That we have two chemists at our pumping station and one of the officials of our company is a chemist.

That we are endeavoring to keep informed of the latest and best methods of water purification and with that idea in mind, officials of the company attended two State and two National conventions of water works men, during the past year.

That the record of typhoid deaths in 1919 in Terre Haute was the lowest on record. This record improves as the number of consumers increases.

That we offered to test samples of milk in our laboratory for the City without cost.

That some water pressure was available for the 363 fire alarms during the year.

That record-gauging pumps registered the water pressure for every minute in the past year. The strain pressure and the speed of the big pump are also recorded.

That, owing to the greatly increased cost of operation, the Public Service Commission authorized an increase of rates in

April which affected the rate for fire hydrants and also large consumers of water—about 150 in all. The increase did not affect about 95% of our customers in any way. The minimum rate for the popular sized meter was not changed and it is still 75¢ per month; in 1915, it was \$1.50 per month, or \$12.00 per year.

That the water rate per 1,000 gallons for the first 20,000 gallons per month in 1919 was 25¢, as compared with 35¢ in 1914.

That the average cost of slack coal purchased by us in 1919 was \$2.71 per ton as compared with \$1.50 in 1914.

That the cost of treating the water per 1,000 gallons in connection with purification is about double what it was in 1915.

That the 45% bonds of the company came due June 1st and were retired by issuing 6% five-year securities, which were sold at 95. The average cost of the company for the money being 2.65% instead of the old rate of 4.5%.

That after paying expenses, taxes, depreciation, cost of borrowed money, improvements and sinking fund requirement, there was a balance of only \$6,875.15 for the year 1919.

That under orders of the Public Service Commission of Indiana, the surplus earnings of the company must be used for retiring indebtedness, or for improvements. Therefore, the holders of the common stock did not receive dividends—in fact, have not had any since April, 1916, and cannot have any for over four years more.

That it required 1/3¢ of every dollar received for water service, during the year to pay the City, State, County and Federal Taxes.

That wages were increased in October, making five increases in two years; wages and salaries have been increased approximately 6% since 1915.

That the average monthly netted water bill in 1919 was \$1.93. Omitting the railroad and industrial consumers, the monthly average was \$1.27.

That NINETY-SEVEN (97%) per cent of all consumers are netted. The three per cent are in small houses without bath rooms and spring privileges.

That we maintain at our pumping station a beautiful park and tennis court which is open to the good people of Terre Haute.

That several of the employees have been in the water works business for over a third of a century and one has been with this company 29 years.

That we now have 2000 miles of water mains, and in August there were 4,500 vacant lots suitable for residences on this stretch where there are no lots.

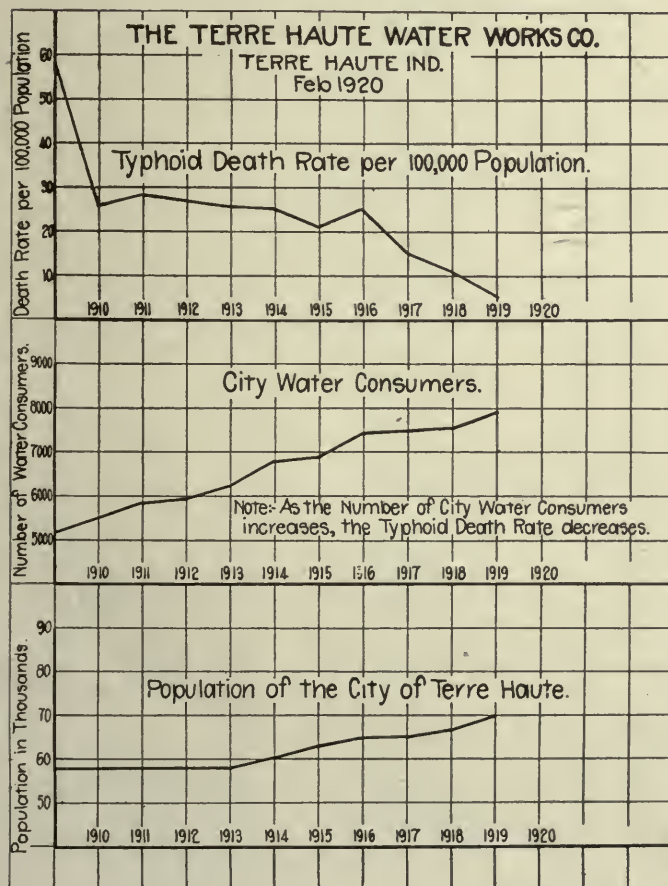
The business of the company is regulated by the Public Service Commission of Indiana, which under the State law, establishes the rates that it may charge, fixes the valuation of the property and the rate of interest that it may earn, audits the books and controls the issue of bonds and stocks.

The quality of the water furnished is under the control of the State Board of Health. The officials of the U. S. Public Health Service inspect the plant.

The State Fire Marshal the National Underwriters and the Indiana Inspection Bureau inspect the plant to determine if the fire protection and general equipment are satisfactory from the fire protection and insurance standpoint.

The management of this company believes that it is charged with a very important public duty and that it is responsible to the public for its stewardship; that it is serving the stockholders best when it is furnishing the public with pure water, good service, and courteous treatment; that it is its intention to conduct the business that the good people of the good City of Terre Haute will continue to have reason to be proud of the Water Works System.

ADVERTISEMENT IN A LOCAL NEWSPAPER, SIGNED BY THE TERRE HAUTE WATER WORKS COMPANY



that, on an average, not more than 20 per cent of the samples tested shall show the presence of certain specific organisms. Five of such determinations are made daily of the filtered water at our plant, and this particular organism has been present in less than 3 per cent of the 390 samples tested since January 1, 1920.

It will be observed that the purity of our water-supply is far in excess of that prescribed by the U. S. Public Health Service. There are, however, certain physical properties in the water that have no bearing on the purity of the supply, which cannot be changed. Among these might be mentioned color and taste. The color is caused by the surface water taking up the coloring matter from the falling leaves. The taste may be due to exclusion of air from the water while the river is frozen over, a vegetable growth, or, as it is at this season, to the snow and ice which has remained on the ground during the winter, taking up or absorbing a taste from the soil.

City Manager Municipalities

HERE is presented herewith a complete list of all towns and cities reported to The City Managers' Association as operating under, or pledged to, some variety of city manager government. The total number on April 1, 1920, is 178, with 5 additional towns across the Canadian border. Of the 178, 112 have adopted approved charters, or charter amendments, indicated by "C" under the column headed "Plan"; 9 have modified manager plans by charter marked "C—," while 57 have created the position of manager by ordinance of the local governing body only, indicated

by "o." The column marked "Number" indicates the number of men who have successively held the position of manager. That headed "Cities," following the manager's name, indicates the number of cities each man has served as manager. To date, there have been 30 "promotions" of managers from one city to a larger.

The population figures are estimates. Added information and corrections to the data submitted will be welcomed by The City Managers' Association, Harrison G. Otis, Secretary, 1812 Tribune Building, New York.

STATE AND CITY	Population	Plan	In Effect	Number	Manager	Cities	Appointed	Salary
<i>Arizona</i>								
Phoenix	40,000	C	April, 1914	3	V. Avery Thompson...	1	Jan., 1918	\$5,000
<i>Arkansas</i>								
Bentonville	3,000	o	Sept., 1915	1	Edgar Masoner.....	1	Sept., 1915	1,500
Hot Springs.....	18,000	C	April, 1917	2	Geo. R. Belding.....	1	Sept., 1918	2,100
Monticello	3,500	o	Jan., 1918	2	A. M. Bell.....	1	Jan., 1920	1,800
<i>California</i>								
Alameda	32,000	C	May, 1917	1	Chas. E. Hewes.....	2	May, 1917	5,000
Alhambra	10,000	C—	July, 1915	3	Grant M. Lorraine....	1	Sept., 1919	2,700
Anaheim	3,500	o	Oct., 1919	1	O. E. Steward	1	Nov., 1919	....
Bakersfield	20,000	C	April, 1915	2	F. S. Benson	1	May, 1917	4,000
Coronado	2,500	o	Jan., 1920	1	G. F. Hyatt.....	1	Jan., 1920	2,100
Glendale	11,500	o	May, 1914	1	T. W. Watson.....	1	May, 1914	2,400
Paso Robles	2,000	o	April, 1919	1	William Ryan	1	April, 1919	2,000
Pittsburg	7,000	o	Sept., 1919	2	Randall M. Dorton....	1	Nov., 1919	3,000
Redding	5,000	o	Oct., 1918	1	E. A. Rolison.....	1	Oct., 1918	2,400
Salinas	4,000	C	1920					
San Anselmo	2,500	o	Nov., 1917	1	C. A. Macomber.....	1	Nov., 1917	1,800
San Diego	95,000	o	May, 1915	2	Wilbur H. Judy.....	1	May, 1919	4,000
San José	40,000	C	July, 1916	2	W. C. Bailey.....	1	July, 1918	6,000
Santa Barbara	20,000	C	Jan., 1918	3	Fred L. Johnston.....	1	Mar., 1920	4,000
South Pasadena...	5,600	o	Mar., 1920	1	R. V. Orbison	1	Mar., 1920	
<i>Colorado</i>								
Boulder	14,000	C	Jan., 1918	2	W. D. Salter.....	1	June, 1919	4,000
Durango	5,300	C	Mar., 1915	2	W. H. Wigglesworth..	1	April, 1919	1,800
Montrose	4,000	C	Feb., 1914	4	R. P. Hilleary.....	1	Aug., 1919	3,000
<i>Connecticut</i>								
West Hartford....	5,620	o	July, 1919	1	B. I. Miller.....	1	July, 1919	4,000
<i>Florida</i>								
Largo	500	o	June, 1913	3	W. H. Turner.....	1	1919	1,200
Ocala	6,000	C	Feb., 1918	3	R. M. Martin.....	1	Oct., 1918	2,400
St. Augustine	6,192	C	July, 1915	2	Eugene Masters	1	April, 1918	3,600
Sanford	7,000	C	Dec., 1919	1	Gerard A. Abbott....	4	Dec., 1919	3,600
Tallahassee	6,500	C	Feb., 1920	1	J. W. Greer	2	Feb., 1920	4,200
West Palm Beach.	10,000	C	Nov., 1919	1	Joseph Firth	1	Nov., 1919	5,000
<i>Georgia</i>								
Cartersville	6,000	C—	Aug., 1917	1	Abram Cook	1	Jan., 1918	2,400
Griffin	10,300	C	Dec., 1918	1	E. P. Bridges.....	1	Dec., 1918	2,550
Rome	14,000	C	April, 1919	1	Sam S. King.....	1	April, 1919	3,000
<i>Illinois</i>								
Glencoe	3,295	o	Jan., 1914	1	H. H. Sherer.....	1	Jan., 1914	5,000
Wilmette	7,824	o	Oct., 1918	2	Chas. C. Schultz....	1	Dec., 1918	2,100
Winnetka	5,115	o	Jan., 1915	2	H. L. Woolhiser.....	1	May, 1917	3,600
<i>Iowa</i>								
Anamosa	3,000	o	May, 1919	1	W. F. Hathaway.....	1	May, 1919	1,800
Clarinda	4,511	o	April, 1913	2	Henry Traxler	1	May, 1919	2,700
Dubuque	47,500	C	April, 1920					
Estherville	4,200	o	May, 1919	1	F. G. Connelly.....	1	May, 1919	
Iowa Falls	4,000	o	May, 1914	2	J. O. Gregg.....	1	May, 1917	1,800
Manchester	3,300	o	May, 1916	2	Thomas Wilson	1	May, 1917	1,440
Mt. Pleasant.....	4,170	o	April, 1916	1	T. W. McMillan.....	1	April, 1916	1,800
Villisca	2,200	o	May, 1919	1	W. J. Oviatt.....	1	May, 1919	1,200
Webster City	6,000	C	Oct., 1916	2	G. J. Long.....	1	April, 1917	1,800

STATE AND CITY	Population	Plan	In Effect	Number	Manager	Cities	Appointed	Salary
Kansas								
Eldorado	10,995	C	July, 1917	1	Bert C. Wells.....	1	July, 1917	\$3,600
Hays	3,300	C	May, 1919	1	Jas. C. Manning.....	1	May, 1919	3,000
McCracken	1,000	C	May, 1919	1	Leonard L. Ryan.....	1	May, 1919	1,800
Wichita	75,000	C	April, 1917	2	L. W. Clapp.....	1	Oct., 1919	6,000
Kentucky								
Cynthiana	5,000	o	Dec., 1915	2	J. J. Curle.....	1	Dec., 1918	
Maine								
Auburn	17,000	C	Jan., 1918	2	Edward A. Beck.....	3	Feb., 1919	5,400
Massachusetts								
Concord	7,000	o	April, 1920					
Norwood	14,000	C	Jan., 1915	2	Wm. P. Hammersley..	1	Mar., 1918	4,000
Waltham	33,000	C	Jan., 1918	2	Henry F. Beal.....	1	Feb., 1920	5,000
Michigan								
Albion	9,000	C	Jan., 1916	3	W. E. Baumgardner...	1	May, 1918	2,000
Alma	7,542	C	May, 1919	1	W. E. Reynolds.....	1	May, 1919	4,500
Alpena	13,300	C	April, 1916	2	Chas. T. Park.....	1	April, 1918	1,920
Big Rapids.....	5,100	C	April, 1914	4	Dan H. Vincent.....	1	May, 1917	1,200
Birmingham	5,000	C	April, 1918	2	Maurice Lowman.....	1	Mar., 1919	2,750
Cadillac	9,734	C	Mar., 1914	3	George Johnson	1	Jan., 1918	2,200
Crystal Falls	7,000	C	April, 1918	1	J. H. Sanders.....	1	April, 1918	3,000
Eaton Rapids.....	3,000	o	Oct., 1913	4	P. T. Mitchell	1	Mar., 1920	
Grand Haven	7,500	C	April, 1915	2				
Grand Rapids.....	165,000	C	Mar., 1917	2	Fred H. Locke.....	1	May, 1918	5,000
Grosse Pte. Shrs..	1,200	C	June, 1916	2	H. N. Kennedy.....	1	April, 1918	4,200
Jackson	52,000	C	Jan., 1915	3	A. W. D. Hall.....	1	May, 1917	4,000
Kalamazoo	55,000	C	June, 1918	1	Harry H. Freeman....	1	June, 1918	6,000
Lapeer	4,500	C	May, 1919	1				
Manistee	9,690	C	May, 1914	2	P. H. Beauvais	1	May, 1918	4,000
Muskegon	50,000	C	Jan., 1920	1	I. R. Ellison.....	3	Jan., 1920	
Otsego	4,000	C	May, 1918	2				
Petoskey	6,000	C	April, 1916	4	J. Frank Quinn.....	1	Jan., 1920	5,000
Portland	2,000	C	Jan., 1919	1	F. L. Jenkins.....	1	Jan., 1919	1,800
Royal Oak	6,000	C	May, 1918	2	Geo. E. Weitzel.....	1	Oct., 1918	3,000
St. Johns	4,000	C	Aug., 1918	2	Theo. H. Townsend....	1	July, 1919	3,000
Sault Ste. Marie..	14,000	C	Dec., 1917	2	Wildor M. Rich.....	1	Aug., 1918	3,000
Three Rivers.....	5,750	C	April, 1918	1	O. O. Johnson.....	1	April, 1918	1,800
Minnesota								
Anoka	4,300	C	April, 1914	1	Henry Lee	1	April, 1914	1,200
Morris	3,500	C	Jan., 1914	2	Frank J. Haight.....	1	Oct., 1918	1,800
Pipestone	3,500	o	May, 1917	1	F. E. Cogswell.....	1	May, 1917	1,800
Montana								
Columbus	1,000	o	Nov., 1918	3	Harry P. Schug.....	1	Jan., 1920	1,800
Glasgow	3,500	o	July, 1916	2	Harvey Booth	1	Mar., 1918	2,100
Scobey	1,000	o	Jan., 1920	1	Roy N. Stewart.....	1	Jan., 1920	
Nebraska								
Alliance	7,000	o	Aug., 1919	1	Cassius C. Smith.....	2	Aug., 1919	3,000
Chadron	3,140	o	April, 1920	1	J. H. Rayburn.....	1	April, 1920	5,000
New Mexico								
Albuquerque	20,000	C	Jan., 1918	3	James N. Gladding....	1	Feb., 1920	5,000
Clovis	7,000	o	June, 1919	1	Oscar Dobbs	1	June, 1919	2,700
Roswell	9,000	o	May, 1914	3	Clyde Fulton	1	Mar., 1920	
New York								
Auburn	40,000	C	Jan., 1920	1	John P. Jaeckel.....	1	Jan., 1920	4,000
Newburgh	30,000	C	Jan., 1916	4	W. Johnston McKay..	1	Sept., 1920	3,600
Niagara Falls.....	55,000	C	Jan., 1916	2	Edwin J. Fort.....	1	Sept., 1918	5,000
Sherrill	1,500	C	June, 1916	3	Amos G. Reeve.....	1	Feb., 1920	
Watertown	40,000	C	Jan., 1920	1	C. A. Bingham.....	3	Jan., 1920	7,500
Watervliet	16,073	o	Jan., 1920	1	Jas. B. McLeese.....	1	Jan., 1920	4,500
North Carolina								
Elizabeth City....	8,925	C	April, 1915	3				
Gastonia	20,000	C	Aug., 1919	1	W. J. Alexander.....	1	Aug., 1919	3,600
Goldsboro	11,000	C	July, 1917	2	I. M. Cashell.....	1	Oct., 1918	3,300
Hickory	5,200	C	May, 1913	4	R. G. Henry	1	Feb., 1920	3,000
High Point	14,000	C	May, 1915	3	R. L. Pickett.....	1	Mar., 1916	2,700
Morehead City....	3,500	o	June, 1916	2	John S. Bennett	1	June, 1919	2,100
Morganton	4,250	C	May, 1913	3	W. R. Patton	1	May, 1918	2,100
Tarboro	4,568	o	April, 1915	1	J. H. Jacobs.....	1	April, 1915	1,500
Thomasville	5,000	C	May, 1915	6	Jas. T. Stewart, Jr....	1	Sept., 1919	2,500
Ohio								
Akron	200,000	C	Jan., 1920	1	W. J. Laub.....	1	Jan., 1920	10,000
Ashtabula	23,000	C	Jan., 1916	2	M. H. Turner.....	1	Jan., 1918	3,000
Dayton	153,830	C	Jan., 1914	2	James E. Barlow.....	1	Mar., 1918	7,500
East Cleveland..	25,000	C	Jan., 1918	1	C. M. Osborn.....	1	Jan., 1918	6,000
Gallipolis	6,490	C	Jan., 1918	1	Edward E. Myers.....	1	Jan., 1918	1,500
Painesville	6,750	C	Nov., 1919	1	Thomas B. Wyman.....	1	Jan., 1920	4,000
Sandusky	25,000	C	Jan., 1916	3	Geo. M. Zimmerman...	1	April, 1918	5,000
So. Charleston...	1,500	C	Jan., 1918	1	P. H. Cheney.....	1	Jan., 1918	1,600
Springfield	70,000	C	Jan., 1914	2	Ossian E. Carr.....	3	Sept., 1918	6,000
Westerville	3,500	C	Jan., 1916	2	Ralph W. Orebaugh...	1	Sept., 1917	2,100
Xenia	10,000	C	Jan., 1918	1	Kenyon Riddle.....	2	Jan., 1918	3,600

STATE AND CITY	Population	Plan	In Effect	Number	Manager	Cities	Appointed	Salary
<i>Oklahoma</i>								
Coalgate	4,000	C	July, 1914	3	Leslie E. Bay	1	Aug., 1919	\$1,620
Collinsville	2,500	C	Feb., 1914	2	F. A. Wright	1	May, 1916	1,800
Madill	2,000	C	Nov., 1917	3	A. P. Marsh	1	May, 1918	1,800
Mangum	5,000	C	Nov., 1914	4	R. B. Snell	1	Jan., 1919	1,800
McAlester	19,000	C	Nov., 1919	1	E. M. Fry	1	Nov., 1919	5,000
Muskogee	50,000	C	April, 1920					6,000
Norman	6,500	C	Sept., 1919	1	W. R. Gater	1	Sept., 1919	
Nowata	8,000	C	April, 1920					
Sallisaw	3,000	C	Nov., 1919	1	Fred E. Johnston	1	Nov., 1919	3,000
Walters	3,600	C	Sept., 1919	1	W. B. Anthony	1	Nov., 1919	3,000
Weatherford	3,000	o	Aug., 1917	3	G. A. Critchfield	1	June, 1919	1,700
<i>Oregon</i>								
LaGrande	6,200	C	Oct., 1913	4	John Collier	1	Jan., 1919	1,800
<i>Pennsylvania</i>								
Altoona	65,000	o	Jan., 1918	1	H. Gordon Hinkle	1	Jan., 1918	7,500
Ambridge	13,000	o	Nov., 1918	2	W. M. Cotton	3	Feb., 1920	4,500
Coraopolis	5,277	o	Mar., 1920					
Edgeworth	2,500	o	Jan., 1914	3	Robert Lloyd	1	Mar., 1920	3,000
Millinburg	2,000	o	Jan., 1919	1	Wm. D. Kochersperger	1	Jan., 1919	2,500
Sewickley	6,200	o	Oct., 1918	1				
Towanda	6,000	o	April, 1913	1	W. T. Howie	1	April, 1918	1,200
<i>South Carolina</i>								
Beaufort	3,700	C	May, 1915	4	Hal R. Pollitzer	1	May, 1918	1,800
Rock Hill	10,000	C	Feb., 1915	2	E. R. Treverton	1	Dec., 1919	3,600
Sumter	9,508	C	Jan., 1913	5	W. T. Brown	1	May, 1919	4,000
<i>South Dakota</i>								
Clark	1,500	o	May, 1912	1	J. E. Smith	1	May, 1912	1,200
<i>Tennessee</i>								
Alcoa	3,500	C	July, 1919	1	V. J. Hultquist	1	July, 1919	2,000
Kingsport	10,000	C	Mar., 1917	3	Herbert L. Kidd	1	April, 1920	4,200
<i>Texas</i>								
Amarillo	15,494	C	Dec., 1912	4	S. B. Motlow	1	Jan., 1920	
Beaumont	40,422	C	May, 1920					
Brownsville	13,200	C	Jan., 1916	3	George Groupe	1	Feb., 1920	5,000
Brownwood	10,500	C	April, 1916	3	E. R. Brashers	1	Feb., 1919	2,400
Bryan	6,295	C	July, 1917	3	H. A. Burger (acting)		Feb., 1920	
Denton	7,000	C	April, 1914	3	H. V. Hennen	1	June, 1919	
Eastland	12,000	C	Jan., 1919	1	Walter Lander	2	Jan., 1919	6,000
Electra	7,000	o	May, 1919	1	W. H. Larson	1	May, 1919	4,200
Lubbock	3,958	C	1918	1	Martin S. Ruby		1918	
Lufkin	7,000	C	April, 1919	1	Lequin Mitchell	2	April, 1919	3,000
Ranger	30,000	C	May, 1919	1				
San Angelo	16,500	C	June, 1916	1	E. L. Wells, Jr.	1	June, 1916	2,500
Sherman	18,000	C	April, 1915	2	O. J. S. Ellingson	1	April, 1916	3,600
Stamford	5,000	C	June, 1918	2	H. J. Bradshaw	1	1919	
Taylor	8,200	C	April, 1914	3	A. V. Hyde	1	April, 1918	2,000
Teague	3,760	o	Jan., 1915	3	C. E. Johnson	1	1919	
Terrell	8,400	C	Aug., 1919	1	J. P. Kittrell	1	Aug., 1919	2,400
Tyler	15,000	C	April, 1915	2	Henry J. Graesser	1	Aug., 1918	3,600
Yoakum	7,500	C	April, 1915	2	J. V. Lucas	1	Nov., 1919	
<i>Utah</i>								
Brigham City	5,000	o	Jan., 1918	2	John H. Burt	1	Jan., 1920	
<i>Vermont</i>								
Springfield	8,000	o	April, 1920					
<i>Virginia</i>								
Bedford	4,500	o	April, 1920					
Blackstone	2,000	C	June, 1914	1	R. B. Stone	1	June, 1914	1,500
Bristol	7,200	C	Sept., 1919	1	R. W. Riggsby	1	Sept., 1919	3,000
Charlottesville	10,688	o	Aug., 1913	3	Shelton S. Rife	1	Sept., 1918	2,400
Farmville	4,000	o	Sept., 1915	2	Leslie Fogus	1	Sept., 1917	1,400
Fredericksburg ...	7,000	o	Sept., 1912	2	L. J. Houston, Jr.	3	Sept., 1918	3,600
Hampton	8,000	C	Sept., 1920					
Lynchburg	35,000	C	June, 1920					
Newport News	37,500	C	1920					
Norfolk	200,000	C	Sept., 1918	1	Chas. E. Ashburner	3	Sept., 1918	12,000
Petersburg	25,000	C	Sept., 1920					
Portsmouth	80,000	C	Jan., 1917	2	W. B. Bates	1	Aug., 1917	5,000
Roanoke	47,346	C	Sept., 1918	1	W. P. Hunter	1	Sept., 1918	4,800
Staunton	10,617	C	Jan., 1908	2	S. D. Holsinger	1	Jan., 1911	2,000
Suffolk	9,000	C	Sept., 1919	1	Richard H. Brinkley	1	Oct., 1919	3,000
Warrenton	3,000	o	Mar., 1920	1	L. M. Clarkson	1	Mar., 1920	1,800
Winchester	7,000	o	May, 1916	2	Thos. J. Trier	1	May, 1918	2,000
<i>West Virginia</i>								
Charleston	43,000	C	May, 1915	3	Bonner H. Hill	1	May, 1919	4,500
Wheeling	80,000	C	July, 1917	2	Chas. O. Ephlin	2	June, 1919	8,000
<i>Canada</i>								
B. C., Kamloops		o	Oct., 1918	1	J. J. Carment	1	Oct., 1918	3,000
N. B., Edmundston		o	Feb., 1920	1	L. Leon Theriault	1	Feb., 1920	3,000
N. B., Woodstock	4,000	o	June, 1919	1	R. Fraser Armstrong	1	June, 1919	3,000
P. Q., Grand Mere		o	Mar., 1920	1	Henry Ortiz	1	Mar., 1920	
P. Q., Westmount	20,000	C	April, 1913	1	George W. Thompson	1	April, 1913	

White Way Lighting in St. James, Minn.

By I. R. Patch

Consulting Engineer, John W. Shaffer & Company, Minneapolis, Minn.

THE city of St. James, Minn., planned an extensive municipal improvement for the season of 1919, including a white way, or street lighting system.

When the white way was first proposed, it met with considerable opposition, but when the benefits were explained to the taxpayers and they realized that if it was ever to be installed it should be done before the paving program was started, most of the opposition was withdrawn. The main argu-

In the business section of the city the standards were placed 90 feet center to center, and in the outlying or residence districts they were extended to about 106 feet center to center. The corner lights, of which there were four for each down-town corner and two for the other corners, were placed 15 feet back from the property line so as to conform with the spacing thru the blocks. This system was carried out thruout the entire city with the exception of the main



NIGHT VIEW OF FIRST AVENUE, ST. JAMES, MINN., ON A WINTER NIGHT

ments advanced in favor of the new lighting system were: from an artistic standpoint, a white way materially beautifies a locality by making the general appearance of the street more pleasing to the eye in the daytime and more cheerful at night; from a business standpoint, a white way makes late afternoon and evening shopping or business more convenient and more desirable and consequently draws considerable trade to that locality or city which has a good lighting system; to a visitor, or a traveler, a well-lighted city gives the impression of being thrifty, prosperous and modern, and this idea, carried away with him, is naturally a good advertisement for the city.

In constructing the system at St. James, the general plan was to stagger the lights.

business corner, the intersection of First Avenue and Sixth Street, where eight lights were placed, two on each corner of the intersection.

The lights are operated on two separate circuits, one which is turned off at midnight, and another that is left on all night. All the lights are connected with the former, or midnight, circuit, except two diagonal lights on each street intersection, which burn all night.

Two styles of light standards are used: the large standards, 12 feet high, are one-light King posts equipped with Novalux units having white glass diffusing globes and glass canopy tops; and the small standards, 10 feet high, are a different style King post, equipped with another type of Novalux

top. One hundred and twenty-two of the large standards are installed down-town, and in the outlying part of the city ten of the small ones were used.

In installing this system 37,150 feet of No. 8 single-conductor, lead-encased, steel-taped cable, insulated for 7,000 volts, was used for the ground cable. In most places the cable was laid just inside the curb, so that not much excavation or tearing up of sidewalk was necessary.

The posts were all set on concrete footings 24 inches square by 3 feet deep and fastened by means of four bolts embedded in the concrete. In the base of each post was placed a Cutter disconnecting pothead for making the connection between the

ground cable and the interior wiring of the post.

Each of the standards was equipped with a 6.6-ampere, series Mazda C lamp of 400 or 250 candle-power each. The current for this system is furnished by the Northern Power Company and is controlled by a 30-kilowatt, 2,300-volt primary and 6.6-ampere secondary constant-current regulator.

This lighting system was designed by John W. Shaffer & Company, municipal engineers, Minneapolis, and The Sterling Electric Company of Minneapolis did the construction work and furnished all material except the standards, which were supplied by the Western Electric Company, of Chicago.

Where Should Name Signs Be Located at Street Intersections?

An Analysis and a Suggested Rational Way of Locating Street Signs

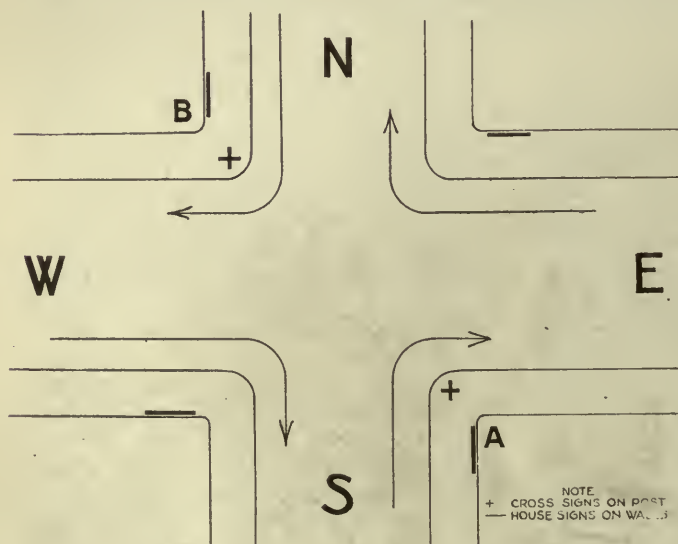
SO many inquiries have been received by THE AMERICAN CITY from various communities asking for the most logical location of street name signs, that it seems advisable to give our readers the benefit of the experience of those who have made considerable study along these lines and whose suggestions have been adopted by a number of large and small cities.

The basic principle involved in the plac-

ing of street name signs is nothing more or less than the "rule of the road"; namely, that, in America, traffic should be on the right-hand side of the street or sidewalk. By following the accompanying diagram, the remainder of this discussion will be made clear to the reader.

The sketch assumes the intersection of two streets, one running north and south, and one due east and west. Street traffic is indicated in all four directions making right-hand turns, as is the rule in congested traffic sections in most of the large cities, particularly during the rush hours. All the references are equally true, however, whether left-hand turns are permitted or not.

Traffic, whether vehicular, motor, or pedestrian, proceeds north on the extreme east side of the north-and-south streets; and south on the extreme west side. Traffic proceeding west on the streets running east and west is confined



to the extreme north side, while traffic east on streets running east and west is confined to the extreme south side. With this clearly in mind and assuming that only two posts or pole brackets with street signs at right angles are to be used, it is clear that these brackets should be erected on the southeast and northwest corners to best serve the results sought by traffic rules and, at the same time, to function logically with and to facilitate the prompt movement of traffic itself. Brackets are indicated on corners A and B of the diagram.

If you are walking or driving north, you approach first in proper line of vision the post or pole on the southeast corner of intersecting streets. This condition is true also of traffic proceeding west on streets running east and west, to be noted on corner B. It is not necessary to look across the street on which you are walking or driving in order to find your street sign. It is directly in front of you.

Another point in favor of this system is the assumption that a man walking or driving north and desiring to turn east on an east-and-west street will have the name of

the street before him without the necessity of crossing the street which he really desires to turn into.

The same conditions rule the position of street name signs when placed on buildings or walls at street intersections. As shown on the diagram, only four street signs are necessary in either instance, whether for bracket erection or fastened to building. The house signs, indicated by the heavy lines at each of the four corners of the sketch, show on different sides of the same street, but the principle is the same as the former one covering the position of the bracket signs; that is, that for right-hand traffic the sign is always in front of the driver or pedestrian at the side of the street thru which he is driving or walking.

It is to be conceded that, if pole signs can be mounted on all four corners, or house signs on all eight sides of the four buildings at street intersections, so much the better. When only four signs are to be used at street intersections, however, the layout designated on the sketch is probably the most logical, and it has proved the most satisfactory wherever used.

Coöperation in Street Cleaning

By Theodore Eichhorn

Superintendent, Department of Streets and Public Improvements, Erie, Pa.

NO municipal function has been so little understood as that of street cleaning. For years our street departments were considered as the refuge of the wards of our politicians. There was little demand for up-to-date equipment—machinery did not vote, so what was the use?

In time these conditions changed. With the demand for improved streets came the need of cleaning them, and this resulted in a demand for efficiency. Department heads were compelled to adopt up-to-date methods in order to keep costs within appropriations made for street cleaning. Our citizens were not content unless streets were cleaned regularly, and the fact that people took a keener interest in city affairs as years passed by, made it necessary for efficiency to be the watchword.

When labor was plentiful and team hire cheap, many cities were able to give effi-

cient service without the aid of motor equipment. Labor shortage and high cost of team hire, however, in many instances upset plans of street commissioners, and made current appropriations too small to give the street-cleaning service demanded.

It appears to be a universal complaint that our street departments do not receive adequate appropriations. First, sufficient appropriations are not made to allow the purchase of proper and necessary equipment and the proper housing of it. Second, funds set aside for actual work are really infinitesimal, and the fact that it is almost impossible to take from the operating funds the cost of new equipment without seriously crippling operations, accounts in great measure for the lack of necessary equipment for cleaning streets in many cities.

The remedy lies in one direction: educate the taxpayers as to the needs of the

street department. Why should the people demand clean streets from a department the appropriation for which has left it in a state of malnutrition? Then, too, people are more careless to-day in littering our streets than was the case in years gone by. Almost everything finds its way to the street.

As cities grow, and congestion becomes greater, fire regulations prevent the old-fashioned bonfire; the modern method of merchandising in original packages has also added to the list of things which find their way to the street. Lawn clipping, tree branches, old shrubs, excelsior, cartons, and a thousand and one other things add to the litter which must be taken from the streets, not to speak of the dirt tracked on to our pavements from unimproved thoroughfares.

In the business districts there appears to be riotous competition as to who can outdo all the others in the way of littering the streets. So-called progressive merchants have old barrels and boxes at the rear of their stores, wherein store sweepings are dumped, together with a miscellaneous assortment of papers, etc. Each welcome zephyr sweeping around the block and up and down the alleyway adds to the burden of the street department.

Complain? What are ordinances for? Call the police! But an army of police could not bring about the result that intelligent coöperation would give. Some day our newspapers will conduct campaigns in behalf of clean streets. Our taxpayers and citizens will respond when they know the situation. In the future, our street departments will be as thoroly up-to-date and modern as our fire departments and other city departments.

Many people are truly ignorant of the necessity of coöperating in the matter of keeping city streets clean. During last fall I personally remonstrated with a citizen who had deposited a 24-page newspaper in the street gutter on the main thoroughfare. Indignant? Why was he paying taxes to have the streets kept clean, when he was "bawled out" for such a little thing as

throwing a newspaper on the street! When he was asked what he thought the effect would be if every person who bought a newspaper would throw it upon the street, he appeared suddenly to comprehend the situation. A few newspapers scattered along the street will make a comparatively clean street look as if it had not been cleaned for a week.

For years our merchants used to start in to sweep at the back end of their stores and brush everything into the roadway fronting their places of business. I have repeatedly seen this done on Sunday, after the street had been cleaned early in the morning, and the men had gone off duty for the rest of the day. Stop it? Yes, but it meant the breaking up of personal friendships of years' standing.

Some day our people will realize the value of giving coöperation to the street cleaning department. They will give inestimable assistance by seeing that much litter which now finds its way to the street is disposed of in another manner. Our merchants and business interests will also be wideawake in giving their support toward preventing the littering of the business streets. The natural accumulation of objectionable matter is all that the street department should be called upon to remove from our city pavements.

Next to the problem of preventing the littering of streets comes the question of having our street cleaning done in as cheap a manner as possible. This can be done thru modern equipment. Every city ought to encourage the production of modern street-cleaning apparatus. To my mind, the department which can be thoroly motorized is the one that will give service. But it takes money to buy equipment. Suitable propaganda nationally directed thru our daily press is needed.

EDITORIAL NOTE.—The foregoing article won first prize in a competition recently announced by the Elgin Sales Corporation for the best article on street cleaning. A goodly number entered the competition and a very creditable group of articles were submitted. The committee of award consisted of George A. Dodge, President of the Elgin Sales Corporation, Arnold B. MacStay, Commissioner of Street Cleaning, New York City, and Edgar J. Buttenheim, President of The Civic Press.

The Planning of a New Town

The Example of Dawson, Colo.

By Russell V. Black

THE small community gains by coming early to civic consciousness and to the adoption of a general scheme development, farsighted, systematic, scientific.

There are many reasons for early city planning, chief among which are the avoidance of the unfavorable conditions which have been experienced by all large cities and which are largely the result of haphazard growth; and again, the provision for happy and wholesome living conditions for its citizens. In planning for a new town the sources from which it springs should be taken into account—its geographical location, topography, natural resources, future industries, the probable character of the people, and many other factors.

While every community has its individual problems, there is no community that cannot gain something from the experience and general problems of other cities. This experience is to some extent available in books and other publications. Chief among these are "The Garden City," by C. B. Purdom, giving an account of Letch-

worth, England (E. P. Dutton & Company); "Town Planning for Small Communities," by C. S. Bird, with special reference to Walpole, Mass. (D. Appleton & Company); "The Little Town," by Harlan P. Douglass, containing a good bibliography (The Macmillan Company); and "The Industrial Village," by John Nolen (a pamphlet of the National Housing Association).

There are instances in which the problem is not the taking up of the loose ends of a village already begun, but the planning of a new city. Here is an opportunity, especially for places which aspire not to large population, but to a social unit having the advantages of a small city, combined with the retention of the advantages usually obtained only in the more open country. It is possible to plan so as to avoid both the unwholesome massing and congestion of population thru the herding of great numbers, and the usual limitations and drabness of life characteristic of a sparse population.

This article is written with the idea of



THE SITE OF THE PROPOSED TOWN OF DAWSON, COLO., IS IN THE MIDDLE OF THIS BROAD BOTTOM-LAND

presenting concretely the methods and advantages that are possible thru the planning of an entirely new community. The example is that of the plan for Dawson, Colo., prepared in the office of John Nolen, town and city planner.

The City's Site

The proposed site of Dawson is on the broad bottom-lands and surrounding bluffs of the fertile Yampa River valley in Routt County, northwestern Colorado. The surrounding country is very thinly settled, and very rough and difficult of access. There are a few settlements along the river and the railroad. The nearest city of any considerable size is Denver, 200 miles to the southeast. The chief industries of the locality are coal mining and general farming. Some small fruits and vegetables are grown largely for local consumption, and there are a few stock ranches.

The Denver and Salt Lake Railroad cuts across difficult ridges and thru river valleys over into the Yampa Valley, thus connecting the region with Denver. It is now contemplated to extend a branch road from the Union Pacific south to Dawson. This will open the valley to the north and northwest, will help to reduce haulage difficulties, and will extend the range of market for coal and farm products. The coal mines are at present being worked far under capacity, because of inadequate shipping facilities. They are ripe for development. With adequate provision for disposal of products, greater facilities will be needed for housing and caring for labor. The agricultural land is attracting farmers and is being rapidly settled. Where now exist a few scattered ranch houses and broad grazing land there is the demand and splendid opportunity for the development of a small city, a complete town unit entirely self-contained.

Studying the Problem

A group of men, including a number interested in the mines, seeing the opportunity for such a city and realizing its possibilities, formed the Dawson Land Company, which proposed the planning and development of a small community. They believed that the scheme should be coöperative, that the town should be planned for the mutual benefit of the miners who might be expected to make Dawson their home, and of their employers.

They realized that the people they expected to bring here to work for them would have to be housed well; that they would have to be fed largely from adjacent farm land; that their children would have to be educated in local schools; and that recreation would need to be provided by local entertainment and activities.

They knew that to obtain the sort of labor they wanted and to retain that labor in its full efficiency, it would be necessary for them to provide for that labor all the things that are fundamental to happy and wholesome living; so they went about planning a real town.

The first step in the procedure was to obtain satisfactory maps. These maps included: (1) a state map showing the relation of Dawson to the large centers of population within the state, and also its relation to the mountain ranges, rivers, and railroads; (2) a county map, showing a more detailed relationship with local topographical and structural features; and (3) a map of the immediate proposed town site, showing all existing conditions, including topography, existing buildings, roads, railroads, rivers, etc.

The next step was a questionnaire, covering all existing and probable future conditions which might in any way affect the original planning and development of the town. This was sent to representatives of the Land Company.

Then an experienced man from the city planner's office visited the proposed site and looked over the surrounding territory.

Upon the basis of these maps, the questionnaire and the result of the city planner's observations, a careful study was made, resulting in a preliminary plan of development which was drawn up and presented to the company.

The study brought out many interesting conditions and problems. In the first place, the site is in an east-and-west river valley. To the south the valley stops at the bluffs, back from which extends a low plateau or mesa reaching to the foot of the mountain range. To the north the broad valley land gives way quickly to the mountains, with little intervening upland. All traffic ways follow the east-and-west line of the valley. The railroad, following the general line of the valley and river, at this point cuts across the bottom-land and divides the town site into north and south sections.

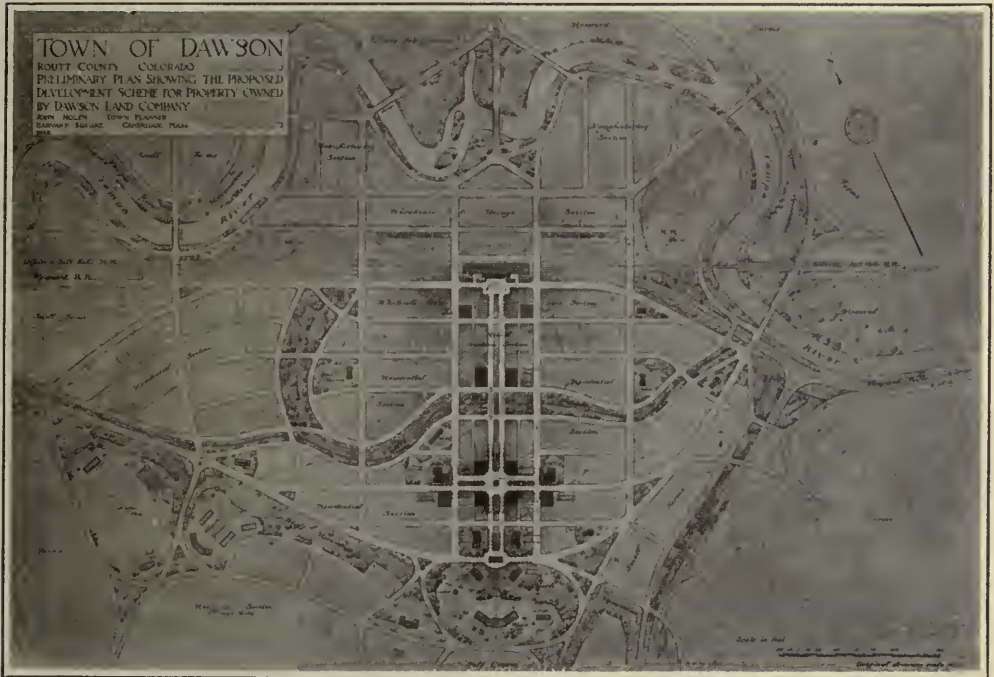
Zoning the Town

The first problem was the general apportionment of the land to the various needs, including residential, business, industrial and agricultural areas, striving at the same time for the greatest efficiency and most wholesome and attractive living conditions, while taking the best possible advantage of topographical features. The existing railroad, running east and west, forms a definite division thru the town site. This line provides a natural separation, offering opportunity for the location of business and residential sections to the south, and of

on the outskirts of the town, north, east and west, land will be reserved for farms.

The Street Layout

The next problem was that of circulation and the subdivision of these various areas with a view to efficiency and beauty. The natural trend of the traffic is east and west along the valley. In all probability this will become the natural direction of the growth of the town, but it was felt that the original town site should become a definite civic center, and to this end traffic should be to a certain extent halted. This is to be ac-



PLAN OF DAWSON, COLO., A PROPOSED NEW TOWN DESIGNED FOR THE DAWSON LAND COMPANY

factories, yards, and industrial plants to the north. This seems a favorable distribution, because the prevailing winds from the south will carry the dirt, noise, and smoke of industry away from the main part of the town. It has the further advantage that the railroad will be made to serve as a broad fire belt.

With this general division in mind, land will be apportioned on the north to factory sites, warehouses, storage houses, and railroad yards, and on the south to wholesale and retail business districts, residential section, parks and public buildings, etc., while

completed by laying some of the main streets of the town across the valley. Mountainview Avenue will be located at right angles to the valley traffic, and at approximately the center and broadest part of the valley. This will afford a good balance to the town, and a desirable relation to the bends of the river and the territory beyond. It will be oriented so as to give an axial view of Wolf Mountain to the north, and will be made further attractive and fitting as a main street by the location, at definite points along its line, of the various groups of public buildings; and by the loca-

tion of the railroad station at one end, and the termination of the other end with a large resort hotel located on the level land at the top of the bluffs.

Paralleling Mountainview Avenue, there will be laid two wide streets planned to relieve the main business street and to provide a district convenient and adequate for business expansion.

The east-and-west traffic thru the valley will be taken care of by three main roads branching from the county highway and leading across the town, one by the railroad station, another along a parkway following the line of an old irrigation ditch, and the other dividing into two lines, one passing thru the town center and the other thru the public buildings group.

Other streets will be located to reach all parts of the town easily and directly. Advantage will be taken of the breaks in the bluff leading to the mesa to provide good connections between the upland and the valley. The river will be bridged to tie the farmland north of the site directly into the town plan.

The three principal building groups, will all be located centering upon Mountainview Avenue. These three groups are to be: (1) a group of stores for retail business; (2) the town center group, including the bank, theater, post office, and an office building built by the Dawson Land Company; and (3) the city group, providing sites for a municipal building, a county court house, a library, and a grange hall which might also contain an agricultural school and exhibition hall.

In addition to these special centers, area will be reserved for building sites for schools, fire stations, a high school, churches, a resort hotel and grounds, a hospital group, a market house for the use of local farmers in selling produce from wagons or stalls, a city market, a garage, a coöperative store, an inn, a gasoline station, etc.

Parks and Other Recreational Features

Certain areas of natural beauty, most of which are not favorable to other development, are to be set aside for parks. They include the steep bluffs in the residential section, impractical as building sites; the borders of the irrigation ditch, which will

desirably be left open, and will serve as a line for an attractive parkway; a sunken depression near the railroad track, undesirable for building, but easily made into good park land; the banks of the river, which might otherwise be diverted to undesirable usage; and the various little triangles and squares about the city which could not be used to other advantage.

It is further proposed that a cemetery of the park type be located to the south, and at least a mile and a half from the center of the town.

Recreation areas will be provided, and include: school playgrounds, a large athletic field for the high school, a drill and aviation field, county fair grounds, and a golf course in connection with the hotel.

The Housing Provisions

Following this plan of layout, the policy of the Land Company is to place before a sufficient number of miners and others who go to make up a complete social unit, the advantages of living in Dawson, and to encourage them to come to the town and make their homes there permanently. Building sites will be sold outright, with certain definite restrictions, to those who wish to live in the town. The smallest lots, which are 150 x 60 feet, afford opportunity for gardens. Small farms are to be designated and sold to those desiring them. Factory sites have been set aside and small industries will be encouraged. The company will undertake some initial development, including the building of houses, a business block, and an inn or hotel, but with the view of selling or leasing them as opportunity arises later. It is not the intention of the company to operate any store or other public facilities, but to encourage the building of stores, etc., by private interests as demand arises. As soon as there is sufficient population, it is planned that the city be organized under and governed in accordance with the state laws.

In brief, Dawson is an example of a far-sighted, broad-minded policy, which, recognizing the need for and possibilities of a well-planned city, has looked far into the probable future needs of that city and has planned to meet them efficiently and economically.

Developments in Brick Pavement Construction

A History of This Type of Paving in the United States

By M. B. Greenough

NEARLY all brick pavements laid before 1895 were filled in the joints with sand or bituminous material. For many years they were laid upon natural foundations. Comparatively slight attention was paid to variable conditions of sub-soil drainage and other factors in soils measuring their supporting power. Artificial bases had their inception in the belief that thus might imperfectly drained or consolidated subgrades be bridged over and settlements in weak spots prevented. The cushion or bedding beneath the brick was primarily intended to compensate for unevenness in the surface of the base. Sand and bituminous fillers continued to be used after the construction of artificial bases became general and after functions without number in addition to these mentioned had been ascribed to artificial bases.

With fillers of these kinds, chief reliance for the durability of the pavement as a whole was placed in the wearing qualities of the individual service units. That confidence was not misplaced is proved by the very large numbers of these old brick pavements in all parts of the country that are now in service, many of them laid long before 1895.

At the time of which we are speaking, there had not been developed a bituminous filler that could meet the much-specified requirement that "it shall not flow in hot weather nor become brittle in cold weather." The result was that as soon as the filler had left the joints, the edges of the brick cobbled. Pavements then became noisy, naturally enough, when traversed by iron-tired vehicles. Nor could the open joints be justified in view of the increasing demand for clean streets.

The development of cement-grout-filled brick pavements grew out of these conditions. The hard filler, it was thought, would protect the edges of the brick. Cobbling under traffic would be prevented, and at the same time a surface promoting maxi-

mum sanitation would be provided. Moreover, it was believed that the firm bonding of each brick to its neighbor would furnish a monolithic wearing surface reflecting all the inherent service-value of the individual brick composing it. Just as the sand cushion had been used with sand and bituminous fillers, it was continued in use with cement grout, purely on the basis of precedent.

Many millions of square yards of brick pavement, cement-grout-filled on the sand cushion, were built in the period from 1895 to 1915. This type came to be regarded as the all but universal type in the East, the South, and thruout Ohio, Indiana and Illinois. Of the West we shall speak later. But east of the Mississippi River this type of brick pavement almost became the single standard.

It became increasingly apparent, however, in observing this type in service, as built under average working conditions, that the sand cushion was a tricky and dangerous element of the structure. Uniform compression was the exception rather than the rule. In all too many cases, patches of the surface were broken down. The brick themselves have given the appearance of being crushed under traffic. But it was soon discovered that the real cause was in an imperfectly compacted sand cushion. The sand would be forced into the joints from below when the surface was rolled. In many cases the filler would enter the joints only a fraction of an inch. A force was therefore exerted upon only a fraction of the face of the brick, sufficiently concentrated in many instances to snap off entire tops of brick.

The sand cushion and grout-filled type, which it was possible to build satisfactorily thru care and watchful supervision, was finally found inadvisable for further use. The hazard was too great. It was satisfactory neither to the public, to engineers, nor to the paving brick industry.

Construction of Green Concrete Foundation Type

The solution seemed to be found in the development in 1914 of the green concrete foundation type and the semi-monolithic type of brick pavement. If the literature of the period from 1914 to 1916 is consulted, the constantly reiterated belief that the principal merit of the two types lay in the elimination of the hazard of the sand cushion will be found. That belief has been justified in the facts. It has also been proved, as it was predicted at that time, that longitudinal cracking, common to the sand-cushion type in frost latitudes, while not altogether eliminated, has been reduced.

There can be no question as to the improvement effected in cement-grout-filled brick pavements by supplanting the plain sand cushion with a mixture of cement and sand or by laying the brick in the green concrete. It must be pointed out, however, that from the time cement filler was introduced, highway engineers had to deal with the problem of the paving slab. A condition of unsatisfactory joint filler needed to be remedied. Unquestionably, the remedy gave the desired edge protection to the brick, but it likewise introduced hazards of its own, for the relief of which we must await a more definite and complete knowledge of slab pavement stresses and strains.

The history of brick paving has been one of a continual seeking for a filler that would furnish the required edge protection to the brick, so as to form a smooth and sanitary surface and at the same time to cause the pavement surface as a whole to bring to a maximum the wear-resisting properties of the single unit.

A Filler Developed

So far this discussion has largely covered that section of the country lying east of the Mississippi River. In the West the early improvements followed the practice of the East. Being in the field of large-scale asphaltic oil production, this section naturally turned to the use of asphalt fillers. On account of asphaltic oil's being a native product, an effort was made to improve it for its several uses, brick-paving filler among the rest. For many years there was no special ground for thinking that extraordinary progress was being made.

But while the East turned from bituminous to cement grout filler, the West persevered in attempting to improve its asphalt filler.

The fillers produced showed increasing stability under high temperatures and less brittleness under low. Since 1912 an asphaltic filler that does meet the situation has been generally used in brick pavement construction. The second outstanding development in brick paving practice in 1919 has been the rapid growth in the amount of this filler used in all parts of the country and in the yardage projected for future construction.

The Standard Brick

Third among the developments of the year now past has been the increase in the use and specification of what is being styled the standard brick—namely, the 3 by 4 by 8½-inch plain wire-cut brick. Already well-established thruout the West, its use has spread during the year to points east, thru Illinois, Indiana and Ohio, and with respect to the absence of lugs, Pennsylvania, and in the South.

Prior to 1895 nearly all brick laid measured 2¼ by 4 by 8 to 9 inches. They were plain wire-cut and unrepressed. They were thoroly well-vitrified brick; so much so that they were sometimes somewhat irregular in shape. But they did possess beyond question unequalled wearing qualities. They were very tough and very hard. It was at about this time that agitation began among engineers for a brick of more perfect shape. The response of the paving brick industry was the brick of the so-called block size—3½ by 4 by 8½ inches.

Coincident with the standardizing of the block size came the addition of projections or lugs for spacing. The plain wire-cut brick had done their own spacing. With the extreme regularity that was expected with repressed brick, the lugs were deemed necessary. With perhaps equal weight, the argument for foothold for animals was advanced as an additional reason. The fact that cement grout filler had come into use did not have a great deal of influence as far as lugs were concerned until engineers began to use the coarse grades of sand in the grout. It is also true that the rounded edge of repressed brick assisted, rather than otherwise, the entrance of sand cushion into the joints from below.

Once the block size of brick began to be

made by all manufacturers, there was practically no change in the size or shape of brick until 1910, when there was developed west of the river the wire-cut brick 3 by 4 by $8\frac{1}{2}$ inches in size, having two instead of four lugs formed by the die instead of being repressed. There were produced east of the river contemporaneously wire-cut-lug brick that aimed to recognize the demand for the advantages of wire-cut as against repressed brick. In size no change was made from that of the repressed brick. The edges of this and the wire-cut brick west of the river were square, whereas repressed brick were round-edged.

The wire-cut brick seems to be generally preferred by engineers for all brick construction. And with the passing of the repressed brick there seems also to have passed the height of the demand for lugs.* They were dropped from the brick previously mentioned as having them formed by the die, more than two years ago. And in the 3 by 4 by $8\frac{1}{2}$ -inch size they are being universally regarded by engineers as superfluous.

Modern Conditions

No longer can it be said that there is a universal type of brick or other pavement. Engineers ask, "Do we use standard footings for all columns in high building construction? Do we use standard designs for every bridge pier, for all dams, for each retaining wall?"

The answer of course is "no." Yet these are comparable departments of engineering. Each of these structures is called upon to support loads, and each rests upon whatever soil foundation is available in each case. We must bear in mind also that each of these is a localized structure with a minimum expectation of variation in subsoil beneath it. Yet we very well know that subsoils and surface soils vary noticeably within short distances.

In spite of the precedent for individual designing thus established for structures resting upon the earth, it has been ignored to a great extent in road construction. Engineers have not insisted that subsoil and surface drainage should be made as perfect as possible.

Drainage has been neglected to the point of being ignored, as has also the known fact that soils vary within short distances and that saturated subsoils accord little if any bearing value for the pavement structure, for we have required the construction of "standard" types of pavement without regard to these conditions. It is not unusual for the same kind and depth of base to be specified for a road 12 miles long. If the section is adequate for the worst condition, then it is extravagantly designed for every other condition.

Extravagance is not compatible with sound engineering. The fact that in one locality a brick pavement, for example, has been built on a 4-inch concrete base is not justification universally for that depth. Conversely, it does not follow that because a 6-inch base seems to be needed in one place, the same depth is required a mile away.

The time is not far distant when a single stretch of pavement will be designed in short sections. In a given contract for a single road there may be concrete base, rolled stone, gravel or slag base; each one may be anywhere from 4 inches upward in depth. If we carry the thought to its logical conclusion, there may be portions requiring no artificial base.

Individually designed roads are a necessity. The use of blanket types is wasteful. It ignores the fundamental principles upon which the character of the profession's public service is founded. It cannot endure.

As nearly correct a description of a slab pavement as we can now write is this: It is a continuous slab resting upon a continuous support of varying elasticity, to be designed to carry moving loads. As yet we have not a proved analysis of such a structure. The nearest approach to it will be found in the analysis of rail stresses, and as far as this work has proceeded it is based upon results secured by the use of an extensometer under actual service conditions.

It will also be recalled that the simple beam theory is based upon positive bending moments. There are no negative moments in a simple beam. When beam or slab continuity is introduced, however, we have set up a consideration of negative moments. Under moving loads a negative moment

* The discussion of this point brought out considerable difference of opinion among the engineers present, many being loath to give up too quickly the use of bricks with lugs which uniformly space the blocks when laid and provide ample space for the filler.

moves in advance and in rear of the load and is effective in the vicinity of the support. Witness the analysis of continuous beams on fixed supports. Just what happens on elastic supports is yet to be shown.

Admittedly, this discussion is theoretical. Fortunately, we have recent data presented by the U. S. Office of Public Roads derived from the measurement of the effect of motor trucks upon pavement surfaces, to show that the principal force of traffic to be met is impact and not bending.

What, then, can we do while awaiting the production of scientifically determined data that can be used with the backing of proof? The answer to that question is clear. We should return to first principles. We should place ourselves upon the safe ground of minimum hazard.

In the end, that means a much more discriminating use of cement grout filler as far as brick pavements are concerned. It means that in many cases concrete bases will be supplanted by another type—the rolled base. It means the passing of standard cross-sections of pavements of all types. And these things mean laying the foundation of real economy in pavement design.

The coming of a saner period of pavement design is evident. Already the reaction against slab pavements is setting in, and the rolled base is in the ascendency. We should not forget that there is more than one type of rolled base. Some are water-bound, some tar-bound, some bound with dry screenings. Local stone secured by the roadside is adequate. The keynote of this type, as it should be of all types of base, is sufficient serviceability at minimum cost.

Specifications

Engineering specifications more and more recognize the principles that have been discussed above. Specifications are becoming specifications of details. There are concrete, rolled stone, gravel and slag bases bound with screenings and with tar. There are asphalt filler and sand, cement grout or combined tar and asphalt fillers. The sand cushion will be specified to accompany bituminous and sand filler, the cement sand bed or the green concrete base where cement grout filler is used. The specifications will be published in sections. By proper selection a type of brick pavement can be specified that will meet local conditions with economy.

To sum up the case of brick pavements at the beginning of 1920, based on the indications of 1919, we may state these points as clearly defined:

1. The value of thoro subsoil drainage is becoming realized, and is more and more being made an integral part of construction.
2. The use of a variety of kinds of bases to meet different subsoil, traffic and economic conditions is firmly established.
3. The tendency of design is away from the slab types of brick pavements and toward the types that depend upon the quality of the individual unit as against the monolithic surface.
4. Cement grout filler is being used with more discrimination.
5. The coming year may see the widespread adoption of the standard brick in localities now laying numerous varieties of lug brick.

ACKNOWLEDGMENT.—From a paper read before the annual convention of the American Road Builders' Association, Louisville, Ky.

"For 1920—More Light"

Cincinnati to-day is a bigger, better, brighter city because of the boulevard lighting system. This plan of illumination has proved its value as a modern metropolitan municipal asset beyond question. In the business sections where it has been installed, this notable improvement has been a magnet in drawing trade, and has added much to the prosperity of Cincinnati.

The Queen City stands upon the threshold of an era of unprecedented prosperity. Improvements which have demonstrated their worth, should be extended in keeping with this program of expansion. Of primary importance is the extension of the present boulevard lighting system. In addition to its commercial value, this system of illumination assures a safer, cleaner city in which to live. Crime and filth disappear when exposed to light. —From an editorial in the *Cincinnati Enquirer*.

Modern Methods of Sewage Disposal

An Illustrated Delineation for Municipal Officials

PART I

By E. S. Chase

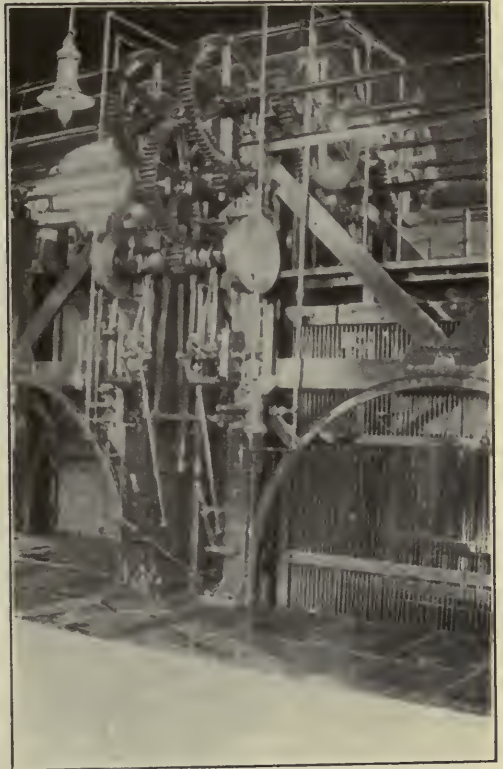
Sanitary Engineer

NO living organism can long exist in the midst of its own wastes. This is as true of the municipal organism as of the individual. From the days of Moses the necessity for the proper disposal of human excreta has been recognized by the race. The problem of sewage disposal, however, with which we are confronted to-day originated only some sixty or seventy years ago. Prior to that time the disposal of human wastes was largely a duty of the individual, and only with the adoption of the water-carriage system did sewage disposal become a civic responsibility.

In the early days of the water-carriage system the easy way of allowing sewers to discharge into the nearest watercourse was adopted, a way all too frequently and indiscriminately practised in modern times. So long, however, as the volume of the stream receiving sewage was large compared with the volume of sewage received, little thought was given to whether this method of disposal was desirable or otherwise.

The results of indiscriminate discharge of sewage into streams are various. In Europe, where the streams are smaller and the population more dense, local nuisances due to the fouling of the streams brought about, at a comparatively early date in the history of sewage treatment, the adoption of methods designed to reduce the organic pollution from sewage entering the water-courses. As soon as the germ theory of disease came into general acceptance and the relation of polluted water-supplies to the prevalence of typhoid fever was clearly recognized, steps were taken to treat sewage and to purify water-supplies. Furthermore, in certain instances, sewage treatment works have been installed to minimize the danger arising from the sewage pollution of shell-fish grounds. In England the pioneer work in sewage disposal began about the middle of the last century, and in the United States about 1890.

As a result of early experiments and of



BAR SCREEN USED AT NUT ISLAND, BOSTON, MASS., TO REMOVE COARSE MATERIAL BEFORE SEWAGE FLOWS INTO OUTER HARBOR

the practical application of the scientific results of these experiments in subsequent years, it may be stated that sewage purification is essentially dependent upon the oxidation of the organic matters in the sewage thru biological agencies. Bacteria and other micro-organisms in soil, water or artificial devices, if given an abundance of oxygen, oxidize complex, putrescible organic compounds to simple, non-putrescible inorganic substances.

Sewage Defined

In order to clearly understand the intent and purposes of sewage treatment, it is



A RIENSCH-WURL SCREEN SUCCESSFULLY USED IN MANY CITIES IN THE UNITED STATES AND IN EUROPE

essential to understand the nature and characteristics of sewage itself. Sewage has been defined as the water-supply of a municipality after use, containing the wastes of man and of his activities. Roughly speaking, sewage contains 1 part of solid matter to 999 parts of water. Of the solid matter, about one-third is in suspension and the other two-thirds in solution. Furthermore, about one-half of the solid matter is organic and the other half inorganic. It is the easily putrescible character of the organic matter and the harmful bacteria which to a large extent bring about the sewage problem. The various methods of sewage disposal are designed, therefore, to remove, within practical limits, these objectionable constituents. In other words, the aim of proper sewage treatment is to prevent nuisance from the decomposition of the organic solids and to prevent, so far as possible, injurious effects to health from disease bacteria.

Disposal by Dilution

Whenever sewage is discharged into a body of water, natural processes immediately begin its purification, microscopic and other living organisms in the presence of the oxygen held in solution in the water tend to oxidize the organic matter, and unfavorable environmental condition relating to temperature and food supplies bring about the destruction of large numbers of harmful bacteria. Under some conditions sewage disposal by dilution is both prac-

tical and scientific, but its feasibility in any specific case can be determined only after careful study of local conditions.

Various authorities estimate that where stream flows exceed 4 to 7 cubic feet per second per thousand inhabitants contributing sewage, there is little danger of nuisance or objectionable conditions in the streams. In the case of large lakes the adaptability of disposal by dilution depends largely upon conditions with respect

to the location of outlets, currents, water-supply intakes, etc. In the case of tidal waters the matter of the sanitary protection of shell-fish grounds and of bathing beaches may require consideration.

While this method of disposal by dilution is probably the one most widely used, the increasing population of our cities and the ever-increasing discharge of wastes into our streams are bringing about in many instances the need and demand for some degree of sewage treatment before discharge into the watercourses. The undesirable effects of unrestricted sewage discharge in producing obnoxious conditions in bodies of water within city limits, in endangering water-supplies and in destroying fish life needs no elaboration.

Screening

In cases where disposal by dilution may be practiced and yet where the removal of floating solids consisting of garbage, rags, paper, sticks, etc., is desirable, screens are frequently used. Screening is also used almost always in connection with more elaborate methods of sewage treatment and to protect pumps where sewage pumping is necessary. There are many types of screens, the type most frequently used being the inclined bar screen with spacing ranging from $\frac{1}{2}$ -inch to 6 inches. Of recent years more elaborate mechanical screens have been installed in a number of instances where a greater degree of solids removal has been desired.

Two of the most prominent of these mechanical screens which have been used in this country are the Riensch-Wurl disk screen and the Reading cylindrical screen. Of the two, there are more installations of the former.

The Riensch-Wurl screen consists essentially of a slotted metal disk, 8 feet or more in diameter, revolving slowly around a shaft inclined slightly from the vertical in such a way that any particular portion of the disk passes alternately in and out of the sewage flow. Floating and suspended solids too large to pass thru the slots in the disk are thus held back and are removed from the disk by revolving brushes, which clean the slots of that portion of the screen which is out of the sewage flow. The size of the slots varies, ranging from $1/64$ - to $1/16$ -inch in width by 2 inches in length.

The Reading screen is a horizontal cylindrical framework of steel, 6 feet or more in diameter and about twice as long, upon which removable segments of fine-mesh screen, 40 meshes to the inch, are fastened. The sewage enters the inside of the cylindrical screen at one end, passes thru the fine-mesh screening, leaving behind a considerable amount of solid matter. As the screen slowly revolves, the screenings are conveyed by a worm to the end opposite that at which the sewage enters. From the outlet end of the screen the screenings can then be collected and disposed of. The screen is kept clean by jets of water.

The amount of solids removed by fine screens varies, of course, with the amount originally in the sewage and with the size of the screen openings. Figures from various installations indicate a percentage removal of suspended solids varying from as low as 5 per cent to as high as 30 per cent.

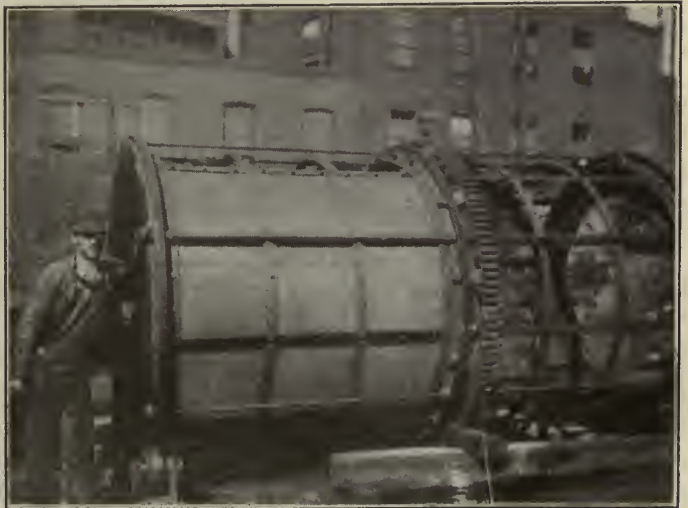
The screenings are very wet, of disagreeable odor and highly putrescible. It is important, therefore, that their disposal be accomplished as soon as possible. This may be done by incineration, by burial in suitable soil, or by mixing

with garbage which is to be subjected to reduction.

The operation of mechanical screens requires constant oversight, and repairs are frequently necessary. In the case of a screen under the author's observation a few years ago, the cost of operation was estimated at about \$2 per million gallons of sewage treated, and of this cost about one-half was for repairs.

Grit Chambers

In the case of sewage from combined systems of sewage where considerable amounts of sand or grit are present, it is usually advisable to install grit chambers. Grit chambers are small sedimentation tanks thru which the sewage flows at considerably less velocity than in the sewers, but still at sufficient velocity to prevent the settling out of all but the heavier inorganic solids. The removal of grit protects pumps, and where tank treatment is subsequently used, prevents heavy solids from interfering with the removal of sludge. The velocity of flow in grit chambers is usually about 1 foot per second, and the time required for the sand to settle out is approximately one minute. Roughly, the volume of material removed by grit chambers varies from 6 to 12 cubic feet per million gallons of sewage. Grit chambers should be provided with two compartments to facilitate cleaning. The material removed is largely inorganic and can be disposed of by filling in waste places.



A WEAND SCREEN USED AT READING, PA.

Settling Tanks

For many years tanks for the removal of sewage solids have been used, both with and without the aid of chemicals. There are several types of tanks, such as plain sedimentation, chemical precipitation, "septic," and two-story tanks.

Plain Sedimentation

The plain sedimentation tank, as its name implies, is simply a tank for settling out the suspended matters from sewage. Such tanks may be rectangular in plan, shallow or deep, with flat bottoms or a series of hopper-shaped bottoms, and with the flow in a horizontal direction. These tanks may also be square or circular in plan, with comparatively deep hopper bottoms and with vertical flow. In the case of flat-bottomed tanks it is necessary to drain off the supernatant liquid at times of cleaning before removing the sludge. For this reason it is essential that such tanks be built with at least two compartments, so that one compartment can care for the sewage flow while the other is being cleaned. In the case of hopper-bottomed tanks, the sludge may be removed while the tanks are in operation, the sludge pipe being located at the bottom of the hopper, the pressure of sewage upon the sludge serving to force it out thru the sludge pipe when the valve on this line is opened.

Plain sedimentation tanks are cleaned at intervals varying from every four weeks in summer to four months in winter. The object of the frequent cleaning is to prevent very active decomposition of the deposited solids and the formation of an offensive scum on the surface of the tank. The sludge removed from tanks of this type varies from 2 to 5 cubic yards per million gallons of sewage treated, the amount depending upon the strength and character of the sewage and the design and operation of the tank. This sludge will usually contain about 90 per cent moisture and will be more or less offensive according to the time of year it is removed. The percentage removal of suspended solids will also vary according to several factors, the two principal ones being the velocity of flow and the period of detention. Generally speaking, the velocity of flow should be in the neighborhood of 0.2 inch per second, and the detention period from 2 to 6 hours.

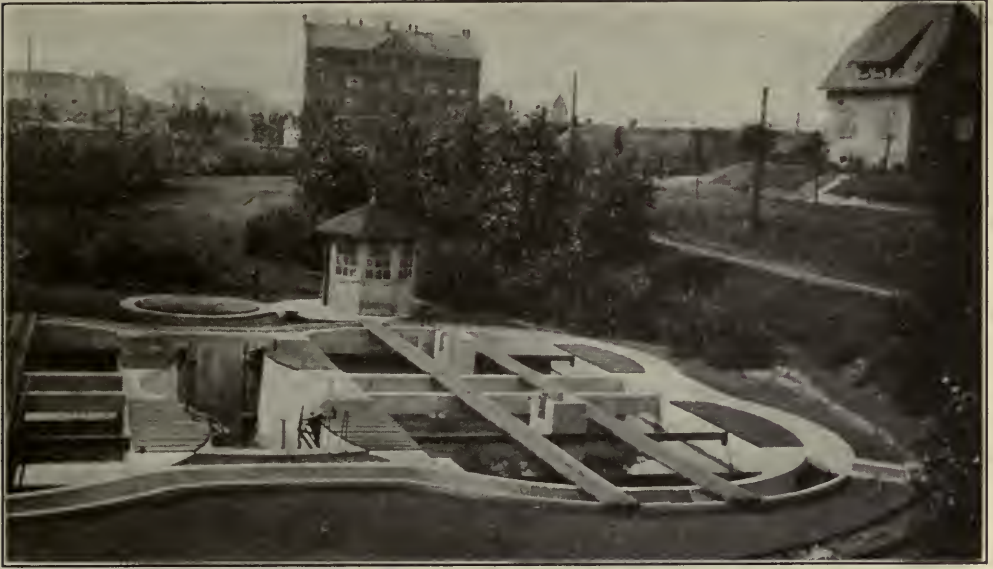
Chemical Precipitation

In order to increase the amount of suspended solids removed by sedimentation, the use of chemicals has been resorted to in certain cases. The method consists mainly in applying the chemicals to the sewage before it enters the settling tank. The chemicals used are generally lime and copperas (iron sulphate). These, when applied to the sewage, settle out in the form of an inorganic floc, which carries with it the particles of suspended solids. This method produces a greater removal of solids than plain sedimentation, but is considerably more costly and produces a much larger volume of sludge. The percentage of solids removed by this method is relatively high, dependent upon the amount of chemicals applied, the velocity of flow, and the detention period in the tank. Generally speaking, chemical precipitation is being installed comparatively infrequently at the present time, and then only in instances where industrial wastes require special treatment.

An interesting type of chemical precipitation is the lignite method used in Coponik, Germany. This consists of adding finely ground lignite and crude alum to the sewage. The resultant sludge is dried and burned as a fuel.

Septic Tanks

The so-called septic tank is essentially a sedimentation tank, so designed and operated as to permit the decomposition of the deposited solids or sludge to proceed in the absence of oxygen. It was originally thought, and even to-day it is rather widely believed, that this decomposition of the sewage solids would continue to such an extent that the sludge would be nearly completely liquefied in time and pass off with the effluent of the tank. The actual amount of solids thus liquefied is much less than at one time believed, and the disadvantages of this type of tank are such that few of them are now being installed. Compared with the plain sedimentation tanks, the septic tank is operated at much longer intervals without the removal of sludge. This has the disadvantage of producing a floating mat or scum of considerable thickness, which becomes very difficult to remove. In fact, the tendency is for the decomposing sludge to rise to the surface and



A TYPICAL GERMAN IMHOFF TANK INSTALLATION AT STAPPENBURG, ESSEN-AM-RUHR
 The distinctive feature of this installation is the rounded channels which conduct the sewage to the tank. Square corners where eddies may form are rigidly eliminated

to remain there held up by entrained bubbles of the gases of decomposition. Furthermore, the effluent of a septic tank is offensive to both sight and smell and somewhat difficult to treat by oxidizing processes.

Two-Story Tanks (Imhoff and Travis)

In order to combine the advantages of plain sedimentation and septic action for the digestion of the sludge, two-story tanks were devised several years ago by Imhoff of Germany and by Travis of England. This type of tank consists essentially of two vertical compartments, separated from each other by a false bottom, the upper compartment serving for sedimentation, and the lower for sludge storage and digestion. The false bottom is provided with slots so arranged that solids settling out in the upper chamber can pass into the lower chamber, and at the same time sludge or gas cannot return thru these slots into the settling compartment. This type of tank permits the sewage passing thru it to remain practically unaffected by the septic action taking place in the sludge.

The Travis tank, unlike the Imhoff, al-

lows a portion of the flow to pass thru the sludge chamber with the aim of removing the soluble products of sludge decomposition. The Travis tank also attempts to remove a portion of the finely divided non-settling solids by means of plates suspended in the liquid in the settling compartment. The function of these plates is to attract and accumulate the minute particles of solids until a settleable mass is formed, which sloughs off and thence settles into the sludge compartment. In these two-story tanks the digestion of the sludge proceeds apart from the main body of sewage flow. The sludge compartments are designed to permit the storage of the sludge during the period of the year when low temperature retards the rate of decomposition. The sludge compartments are provided with gas vents to allow the escape of gas from the decomposing sludge. The sludge produced in these tanks is usually considerably less putrescible than that from plain settling tanks or septic tanks, with a lower moisture content and of such consistency as to dry more easily. Trouble is occasionally caused by the foaming of gas thru the vents.

The Use of Motor Trucks Thruout Municipal Departments Effects Savings Appreciated by the Taxpayer



A 3½-TON KELLY-SPRINGFIELD TRACTOR EQUIPPED WITH SNOW-PLOW, OWNED AND OPERATED BY THE SOUTH PARK COMMISSION, CHICAGO



THE CITY OF LEBANON, N. H., USES THIS 3½-TON FEDERAL FOR HAULING MATERIALS FOR STREET MAINTENANCE. THE TRUCK IS HERE SHOWN AT THE SAND-PITS OUTSIDE THE CITY



MOTOR FIRE APPARATUS OF THE KANSAS CITY, KANS., DEPARTMENT



TWO WHITE CHEMICAL TRUCKS THAT ARE QUICKLY ON THE JUMP AT THE FIRST TAP OF THE GONG, DURHAM, N. C.



MAXIM FIRE TRUCKS EQUIPPED WITH SEWELL CUSHION WHEELS, IN USE AT ONE OF THE STATIONS OF THE WATERTOWN, MASS., FIRE DEPARTMENT

Tentative Suggestions for the Standardization of Governmental Charts

By Rowan Whealdon and Robert D. Leigh

Reed College, Portland, Ore

WHAT the map is to geography, the chart should be to government. The governmental chart should be a graphic representation of the scheme of a government, showing clearly the nature of the governmental departments and their relationships to one another.

There are three governmental relationships: origin, removal and function. By origin is meant the source from which an officer or a body receives its position. It may be from the people by election, or it may be from a superior body or officer by appointment.

The removing authority is also of universal significance. Surely in most cases it is destructive of the most successful administration to have a government unit responsible to one source for placement and to another for displacement. When the powers of placement and displacement come from the same source, the relationship is doubly important.

The third fundamental relationship is that of function. One officer or body may be connected with another by having no more than advisory power. Or, again, the connection may be closer, such as a supervisory or a veto right. There are still other primary relationships which affect the people; for example, the legislature with its private law-making powers.

The usual governmental charts are unsatisfactory. They do not contribute as much as they might toward the representation of the scheme of government. Most of them are masses of boxes, circles and lines without much system or completeness. In some cases a line means an originating relationship, in others a functional connection. Usually the primary functions are not disclosed at all except by general inference from the name of the unit, and power of removal is almost always unnoted. Inconsistency is, however, the worst feature. To have a line mean one sort of relationship on one chart and another on another is bad enough, but such inconsistency appears, at times, on the same chart.

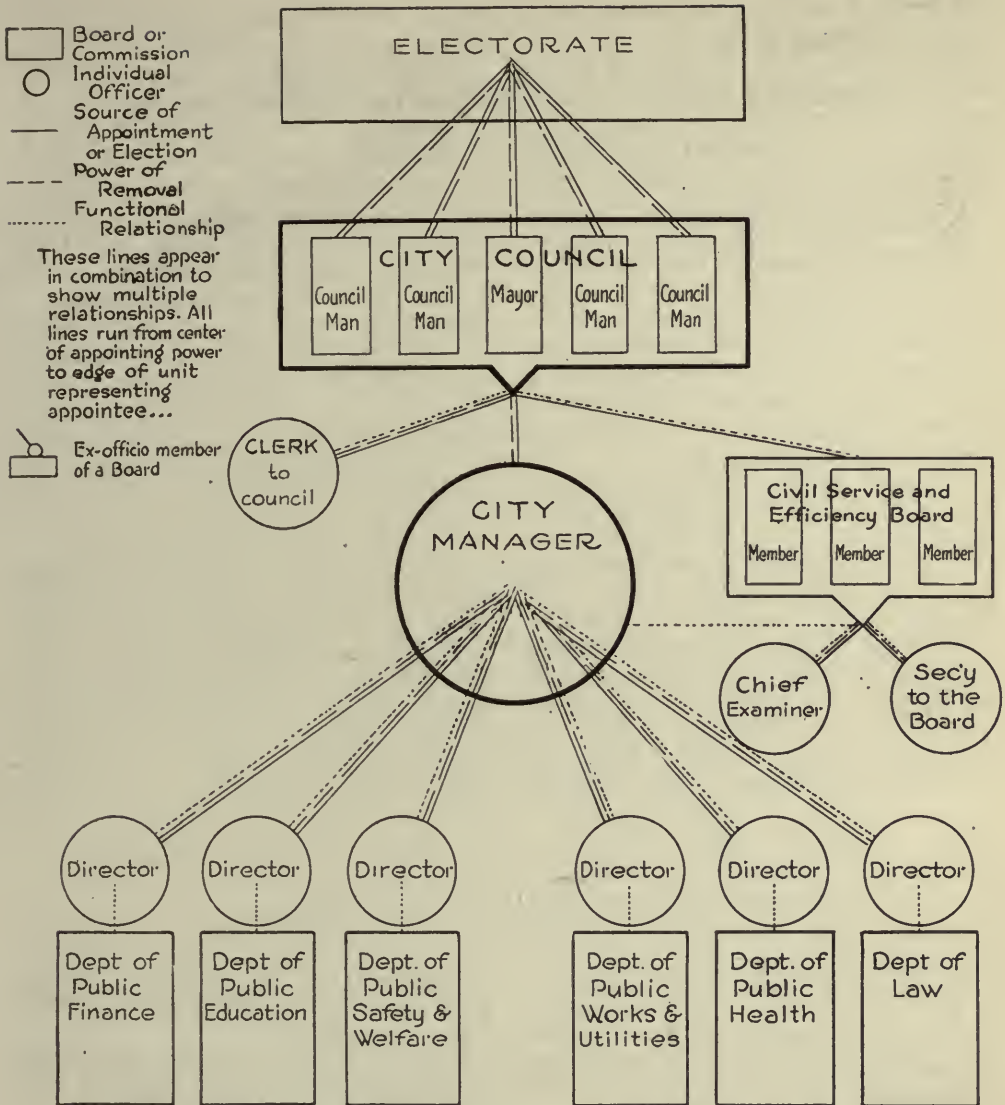
Map-making has definite system. North has a definite position at the top of the page. Relief maps, contour maps, and political maps all have their technique. Why not give the governmental chart a technique? Of course it can never be so definite as in the making of maps to exact scale, but certainly there is room for valuable systematization.

Intelligent Choice of Devices

There is a basic rule in chart-making which should never suffer exception. A *government unit should be represented by a graphic unit*. Any officer or body which acts as a separate division of the government should be so indicated. When the governmental unit consists of a single officer distinctly apart from all others, it may be represented on the chart by a circle, leaving the rectangle for boards, commissions, committees and other multiple units. Units which have important and special powers when acting in conjunction with other units as a larger unit, should appear on the chart as part of the larger group.

Since lines most frequently indicate relationships, a definite system should be used. A single unbroken line might represent originating relationship; a broken line of dashes, removal; and a dotted line, functional connection. With this as a basis, when two or more of the three relationships exist between two bodies, combinations can easily be made. Lines should be drawn from the middle of the unit from which they emanate to the circumference of the unit to which they proceed. This avoids possibility of misunderstanding as to which unit is the appointer and which the appointee.

One peculiar relationship exists in governmental practice which must be classed as functional. An appointing officer, such as state governor, is frequently ex-officio member of a number of the units which he appoints. This may be indicated graphically by a diminutive reproduction of the appointing officer's graphic unit at the circumference of the unit representing the appointed board.



GRAPHIC PRESENTATION OF THE CITY MANAGER PLAN, USING THE SUGGESTED STANDARD SYMBOLS

A legend should be attached to the chart showing just what each device means. At first this would be especially necessary; but if any simple plan were consistently adhered to, it would soon come to have meaning as definite as any of our common symbols.

It is not wise to attempt by graphic means to put more than three fundamental relationships on a chart. If it is desirable to show whether the originating power means election or appointment, it should be covered by a footnote. So, also, where the

functional connection line shows working relationship there may be a footnote to tell whether the relationship is advisory, supervisory or of another sort.

These devices have covered only the interrelationships between governmental units. The primary functional relationships, such as that of the legislature in making laws, of the courts in judicial interpretation, are in almost all cases indicated by the name of the unit. So also the name of the unit usually gives a definite clue as to the nature of its internal organization. This,

however, can well be made plainer by the form of the bounding lines of the graphic unit. If the department is loosely organized, it is suggestive to have the bounding lines fine or broken; if the reverse, they can be made heavy, indicating the organic unity. The size of the graphic unit should not depend so much on the numerical size of the department represented as upon its governmental importance. A single officer is frequently made more important than a large board; hence it would be unreasonable to give the unimportant board graphic predominance. Here, again, only the larger facts can be shown on the face of the chart. Explanation and reference must give such details as are desired.

Position is another resource which can be utilized. One part of the graphic field is no better suited than another for representation, yet upon general arrangement depends the success of the chart. The chart should start with the electorate, the fact being kept in mind constantly that the final expression of the functions of the units is for the same electorate. Footnotes are to be preferred to written-in explanations. They obviate the danger of cluttering up the chart, invariably destroying its graphic

effectiveness. No chart can cover much ground without some such help.

These suggestions are intended to make the chart a more usable aid to the study and explanation of government. If they serve to complicate rather than simplify chart-making they fail in their purpose. Many devices might be used making it possible to show innumerable facts on the face of the chart. For example, by means of squares, triangles and other graphic symbols, it would be easily possible to represent every type of department or official. By means of colors, dots, and dashes and their combination, every sort of relationship could have graphic representation. But the result would not be easily intelligible; it would be hieroglyphic rather than graphic. Only such devices as help rather than hinder the easy interpretation of government are desirable on a chart. These suggestions are, moreover, designed only for general governmental charts intended to give a clear conception of the organizations of such units of government as the city, county, state or nation. Special-purpose charts indicating some single features would probably alter these rules and create a technique to fit their special cases.

On the Calendar of Conventions

APRIL 12-17.—ATLANTA, GA.

National Organization for Public Health Nursing. Biennial convention. Executive Secretary, Ella Phillips Crandall, 156 Fifth Avenue, New York City.

APRIL 13-17.—NEW ORLEANS, LA.

National Probation Association. Annual conference. Secretary, Charles L. Chute, 58 North Pearl Street, Albany, N. Y.

APRIL 19-21.—CINCINNATI, OHIO.

National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 60 State Street, Boston, Mass.

APRIL 27-29.—ATLANTIC CITY, N. J.

Chamber of Commerce of the United States of America. Annual meeting. General Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

MAY 4-6.—CHICAGO, ILL.

National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 87 Milk Street, Boston, Mass.

MAY 5-7.—WASHINGTON, D. C.

American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

MAY 7-8.—PHILADELPHIA, PA.

American Academy of Political and Social Science. Annual meeting. Secretary, J. P. Lichtenberger, Logan Hall, West Philadelphia, Pa.

MAY 10-11.—ST. LOUIS, MO.

American Association of Engineers. Annual convention. Secretary, C. E. Drayer, 63 East Adams Street, Chicago, Ill.

MAY 13-15.—DALLAS, TEX.

League of Texas Municipalities. Annual convention. Secretary, Frank M. Stewart, University of Texas, Austin, Tex.

MAY 18-22.—PASADENA, CALIF.

National Electric Light Association. Annual convention. Acting Secretary, S. A. Sewall, 29 West Thirty-ninth Street, New York City.

MAY 19-21.—NEW YORK CITY.

American Federation of Arts. Annual convention. Secretary, Miss Leila Mechlin, 1741 New York Avenue, Washington, D. C.

MAY 19-21.—ATLANTA, GA.

Tri-State Water and Light Association of the Carolinas and Georgia. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

JUNE 7-10.—DETROIT, MICH.

International Association of Chiefs of Police. Annual convention. Secretary, James L. Beavers, Chief of Police, Atlanta, Ga.

JUNE 16-23.—DES MOINES, IA.

General Federation of Women's Clubs. Biennial convention. Corresponding Secretary, Mrs. Mary I. Wood, Portsmouth, N. H.

JUNE 21-25.—ATLANTIC CITY, N. J.

International Association of Rotary Clubs. Annual convention. Secretary, Chesley R. Perry, 910 South Michigan Avenue, Chicago, Ill.

JUNE 22-24.—MONTREAL, QUE.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West Seventy-first Street, New York City.

News and Ideas for Commercial and Civic Organizations

Community House Built to Further Americanization Work

SARATOGA SPRINGS, N. Y.—Saratoga Springs has provided a community house for its foreign residents in which every opportunity is to be given them to learn English and gain a knowledge of American life and ideas. This was accomplished thru the efforts of a committee representing the Chamber of Commerce, the Community Association, the College Women's Club, the Mothers' Club, and the Giovanni Italia Lodge of Young Italy, working in coöperation with M. M. Dodge, who is in charge of Americanization work for the State Department of Education in this district; the Committee on Buildings of the Board of Education; and the Superintendent of Schools.

The conclusions reached by the committee, as stated in the report on the subject presented to the Board of Education by Charles L. Mosher, the Superintendent of Schools, were that a deep interest on the part of the foreign population itself was essential to successful Americanization work and that the evening school held in the high school building would not serve the purpose adequately, but that a small two-story brick building standing on No. 1 School property and used as a shop would, when renovated and properly equipped, serve effectively as a center for this work, because a large majority of the foreign-speaking population live near that school. The committee therefore petitioned the Board of Education in the names of their respective societies to assign this shop building to the work of Americanization and related efforts.

When the Board of Education first looked over the building to see whether it would do, there was everything imaginable stored within its walls. Its possibilities were easily recognized, however. To-day it is a community house and is as clean, cosy and attractive as the hands of car-

penters and painters can make it. Since the building was originally erected for use as a workshop for the school carpenter, it is a substantial structure, with one room on the first floor and a corresponding one on the second. The two rooms are finished with beaver board in panel effect, and the whole is murescoed in buff color. About \$1,500 has been expended in the improvements, one-half of which was raised among the societies interested in the movement, the balance having been provided by the Board of Education. In order to cut down the expense, the boys of No. 1 School did the painting and murescoing under the direction of the manual training instructor.

With the coöperation of the State Department of Education, a trained director, Miss Elsie Swartwout, of Auburn, N. Y., has been secured and is now in charge, arranging the work.

An institute for neighborhood workers has also been inaugurated and the first two lectures have been given. The institute is being conducted in a public hall. In fact, it is the intention to develop this local neighborhood house movement to the highest possible degree of efficiency and demonstrate the possibilities of this line of work.

J. E. CANFIELD,
Executive Secretary, Saratoga Springs Chamber
of Commerce.

"Little Journeys" by Local Merchants to Manufacturing Plants

LAWRENCE, MASS.—A plan that is being put into operation by the Lawrence Chamber of Commerce and which may be of interest to other secretaries is a series of "little journeys," or educational tours, that are being made by local merchants to the manufacturing establishments in the community.

The first of these tours occurred on October 29, and was made by the furniture dealers' unit to the mills of the Patchogue-Plymouth Corporation, a rug-manufacturing plant. The unit inspected the entire

Otterson Auto-Eductor Cleans Catch Basins Saves Time-Money-Labor



The Otterson Auto-Eductors are saving thousands of dollars yearly to the following cities now using them:—

Seattle, Wash., 1 machine
Portland, Ore., 1 machine
San Francisco, Cal., 1 machine
Chicago, Ill., 1 machine
Chicago, Ill., repeat order, 6 machines
Chicago Park Board, 1 machine
Milwaukee, Wis., 2 machines
Milwaukee, Wis., repeat order, 2 machines
Indianapolis, Ind., 1 machine
Indianapolis, Ind., repeat order, 1 machine
Louisville, Ky., 1 machine
Louisville, Ky., repeat order, 1 machine

Akron, Ohio, 1 machine
Albany, N. Y., 1 machine
Brooklyn, N. Y., 1 machine
New Bedford, Mass., 1 machine
Providence, R. I., 1 machine
Providence, R. I., repeat order, 1 machine
Richmond, Va., 1 machine
Bridgeport, Conn., 1 machine
Halifax, N. S., 1 machine
U. S. Army Camps:
Camp Meade
Camp Gordon
Camp Lee
Honolulu, H. I.

Efficient, economical and sanitary in operation. Cleans catch basins in from four to twenty minutes:

**Equipment mounted on any 5-TON
Chassis of suitable standard make.**

THE OTTERSON AUTO-EDUCTOR CO.

817 FAIRBANKS BLDG.

SPRINGFIELD, OHIO.

plant and watched with much interest the different steps from the time the raw material was taken into the mill until it was sent out in the finished product. The trip started in the stock-room, with its vast quantity of various-colored stock, and then, in order, were visited the cutting-room, where the material is cut and reeled for spinning; the spinning-room with its large spinning frames; and the warp dressing department, where are located the largest warping frames in the country. A very interesting part of the work is the weaving, with looms weaving rugs from 27 inches to 4 yards wide. An inspection of the company's modern power plant concluded the very enjoyable visit.

The second of the "little journeys" occurred during the forenoon of November 6, and was made by the clothing dealers to the Arlington mills, which manufacture worsted goods. Every moment of the time was devoted to a careful study of the different processes thru which the wool passes, explained to them by an expert. The workings of a modern plant of this character were a revelation to the members. The merchants were much pleased with their visit to the Arlington mills and are planning other trips there in the near future.

The third tour was made by the grocers and provision dealers to the plant of the Morin Steam Bakery, where they witnessed the process of bread-making. Step by step the dealers followed the different processes from the assembling of the raw materials until the finished golden brown loaves wrapped in wax paper were ready for distribution. The dealers showed much interest in watching the different machines employed, particularly the mixing machines, which eliminate the drudgery of home-made bread-making, and the scaling machine, where the dough is automatically cut into loaves of the desired weight.

The fourth tour was made in January by a group of jewelers to the plant of the Waltham Watch Company.

The Lawrence Chamber of Commerce has had three objects in view in conducting these tours:

1.—The bringing of the merchants engaged in one line of business into closer touch with each other. The Chamber believes that in this way is established a spirit of friendliness and good fellowship, where distrust and sus-

picion existed before, and that the former means much to the business future of the city.

2.—The practical education of dealers to enable them to get first-hand information on just how an article is made, what it is good for, and why.

3.—The bringing of the manufacturers and merchants together in order to create an interest in the output of the local manufacturing plants.

The plan has been very successful, and the different groups for which the tours have been conducted have expressed themselves quite enthusiastically regarding them.

F. B. WHEELER,
Retail Trade Secretary, Lawrence Chamber of Commerce.

San Antonio Housewives in League to Bring Down Cost of Food

SAN ANTONIO, TEX.—The Housewives' Chamber of Commerce of San Antonio, which has been organized to make war upon the present high cost of food, is urging widespread economy and efficiency in buying as one of the ways in which to meet the situation. Other ways in which it is striving to bring down prices are enumerated in a statement issued to the press by the Housewives' Chamber in December, of which the following is an excerpt:

"1. We urged army officials and city officials to allow retail grocers to have army goods at a discount, so that they could sell at army prices. One week later it was announced that retail grocers could secure army goods at ten per cent discount to sell at same prices as the army store.

"2. We successfully opposed the recent campaign of the wholesale grocers to close the army stores in Texas. We did this with the aid of Washington officials.

"3. We have a bona fide membership of 6,000 signed pledges, and more are pledging every day.

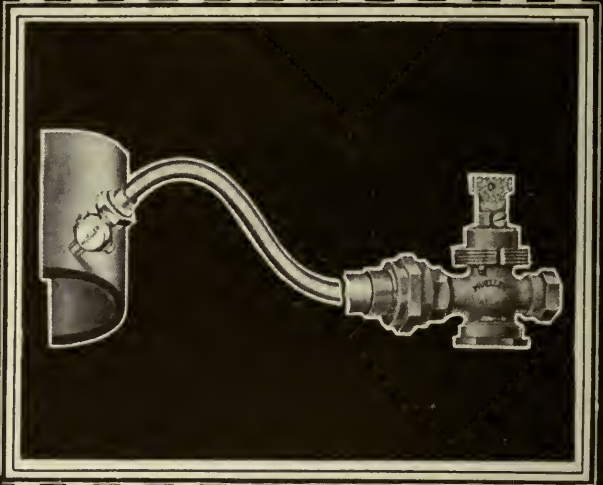
"4. By coöperation of Mr. Saladino, official weights and measures man, we have caused old scales to be replaced with new ones in various stores, and both merchants and customers are more careful as to weights.

Every Ward Organized

"5. We have every ward in the city organized. Each has its ward chairman, who in turn has her precinct chairman, etc. Thus we can thoroly canvass the city for memberships, spread economy propaganda, call ward meetings. Each chairman may, if desired, buy wholesale lots of provisions for her ward.

"6. We are arranging for purchases of wholesale lots, direct from producers.

"7. We have organized departments of milk, meat, fuel, dry goods and clothing, gro-



MUELLER

Goose Necks, Curb Cocks Extension Service Boxes

The three items here shown — **MUELLER** Goose Neck No. E-500, **MUELLER** Curb Cock No. E-565, and **MUELLER** Extension Service Box No. E-751—embody the **MUELLER** standards of design and precision in manufacture.

Most Water Companies recognize **MUELLER** leadership—and find that **MUELLER** equipment reduces operating costs and increases dividends.

Write us for detailed information, prices on these and other items, and proof of **MUELLER** efficiency.

H. Mueller Mfg. Co., Decatur, Ill.
PHONE BELL 153

Water, Plumbing & Gas Brass Goods & Tools
New York City, 145 W. 30th Street
Phone Watkins 5397
San Francisco, 635 Mission Street
Phone Sutter 3577
Sarnia, Ontario, Canada

Mueller Metals Co., Pt. Huron, Mich., Makers of Red
Tip Brass and Copper Rod and Tubing; Forgings
and Castings in Brass, Bronze and Aluminum;
also Screw Machined Products.

ceries, rents, restaurants, weights and measures, fair price commission, and bulletin board.

"8. We have two large bulletin boards conspicuously placed in the city, and we have three staples constantly on sale at from 10 per cent to 24 per cent below market prices. We continually sell full cream milk at 16 cents per quart, best creamery butter 59 cents per pound, Peaberry coffee 38 cents per pound. In addition, we bulletin all merchants who will sell any article for less than current prices for one week. Home manufacturers have promised to give us a home leader for each week.

"9. Two prominent bakers raised the price of bread one cent per loaf. We protested to the bakers and the Fair Price Board. Thus bread was raised to consumers one cent per loaf for wrapped bread and not at all for unwrapped bread. This price was made a fixed one by the Fair Price Commission. Also our agent sells bread tickets, ten tickets for 80 cents, each ticket good for a one-pound loaf, which means 8 cents per loaf. Price fixed by the Fair Price Commission was 10½ cents per pound wrapped, and 10 cents per pound unwrapped.

Buy Wisely

"10. We continually preach the gospel to women that they have two efficient weapons to use in fighting the high cost of living: one is, 'Buy where goods are cheapest,' in which our bulletin board is an efficient aid; the other is, 'Do not buy at all,' unless absolutely necessary.

"11. The public complain that country produce wagons were required to leave the public square at 7 o'clock in the morning, returning at 3 o'clock in the afternoon. We co-operated with the Mayor in bringing before the public the fact that wagons were allowed to remain until 9 in the morning and could remain as long as necessary in the evening to dispose of their stock.

"12. We have promised to coöperate with city officials in the new market where country produce will be sold all day direct to the consumer.

"13. With the coöperation of the Men's Chamber of Commerce, we secured a milk commission for San Antonio.

"14. We have representation on the Federal Fair Price Commission."

MRS. WILLIAM F. SPRAGUE,

Corresponding Secretary, Housewives' Chamber of Commerce of San Antonio.

\$50,000 City Development Fund Raised in One Hour

OKMULGEE, OKLA.—Raising \$50,000 in less than one hour was a feat accomplished at the annual banquet of the Okmulgee Chamber of Commerce held on February 5. This amount was subscribed by 134 men out of a total number of 325 in attendance at

the banquet. The fund was subscribed on call of the chairman immediately after R. W. Budd, the secretary-manager of the Chamber, had made a report covering the accomplishments of the organization during 1919 and presenting its program for 1920.

The money subscribed will be used to cover the running expenses of the Chamber of Commerce for the current year, and the expense of conducting any special movements for the general betterment of the city or its industrial development. The pledges ranged in amounts from \$12.50 to \$1,500. There were six subscriptions for \$1,500, twelve for \$1,000, and a large number for \$500 and \$250.

CHARLES I. O'NEILL,
Publicity Director, Okmulgee Chamber of Commerce.

Tallahassee Chamber Rules Against Billboards

TALLAHASSEE, FLA.—The Tallahassee Chamber of Commerce has placed the weight of its influence against billboards in the following strong resolution which it adopted about a year ago and the endorsement of which it secured from the City Council:

Whereas, all communities in the state of Florida are seeking to bring new settlers and new industries to their respective counties; and

Whereas, good roads and good scenery along the roads, and neat cities and towns impress tourists in a way that may lead them to elect to locate in such well-kept communities; therefore, be it

Resolved, that the Tallahassee Chamber of Commerce recommend, and does hereby recommend and urge that the city and county officials and property owners in the city of Tallahassee and in Leon County do not permit on their own property, nor on or along the highways, on buildings and fences, or on fields bordering public highways in Leon County the erection and display of any advertising signs, boards, billboards, or other advertising devices, nor allow advertising boards or billboards to be placed on top of buildings within the city of Tallahassee, nor any such placed in the residence section of the city of Tallahassee. Be it further

Resolved, that we also recommend, in the interest of safety to the public, as well as to improve the appearance of the business district of the city, that all business signs for stores or office buildings, garages, etc., be securely fastened flat against such building and not project or extend above the sidewalk beyond the building line. And we urge the members of this organization to coöperate in this matter in every way possible, to keep this city and county free from advertising signs, billboards and similar devices, so as to increase



"You read this for yourselves and then you'll agree with me."

The Southern Goliath

HE was an important business man of Alabama whose power extended far beyond his own city. As president of the School Board he had stood against Automatic Sprinklers for two years to "Keep down expenses."

Suddenly he changed.

Standing before the Annual School Board meeting with a pamphlet in his hand, he said, "this was handed to me by a Boy Scout. That boy was a David, this booklet was the pebble, and," with a good natured smile, "I reckon I'm the Goliath."

"Last July I read about the University fire over in Selma. I happened to be in Birmingham that Saturday night and saw Tuggle Institute burn to the ground. A few weeks later I heard details concerning the orphanage fire in Huntsville in October—but it took this book sent out by the U. S. Commissioner of Education, to show me why we have these fires so steadily! And the only thing that's going to stop it is installing Automatic Sprinklers."

Several men were on their feet in a second.

"The town can't afford it," one of them shouted.

"Nothing of the kind", shot back the President. "You don't know what's in this book. Every page shows the necessity of protecting the lives of our school children. How would any one of us feel if just one child burned to death in a school fire here?"

He carried the meeting unanimously because he knew conditions and knew the cure. That town equipped the basement and other danger spots of its schools with Grinnell Automatic Sprinkler Systems just as Buffalo, Pittsburgh, Erie, Binghamton, Waterbury and scores of other have.

If you are an official in any orphanage, school or hospital, use your influence to have Grinnell Automatic Sprinkler Systems installed. They safeguard human life as nothing else can because they are on duty day and night. Whenever the fire starts—the water starts.

Or if you are just a father or mother, and want to gain a victory over any Goliath that opposes sane protection for the helpless of your city, we will send you a copy of the same book that the U. S. Bureau of Education is distributing. Write today to Grinnell Company, Inc., 283 W. Exchange Street, Providence, R. I.

GRINNELL



COMPANY

Executive Offices
Providence, R. I.

Complete Engineering and Construction Service on Automatic Sprinklers.
Industrial Piping, Heating and Power Equipments. Fittings, Pipe, Valves.

GRINNELL AUTOMATIC SPRINKLER SYSTEM—When the fire starts, the water starts.

property values by preserving the natural beauty of this section.

Several billboards have unfortunately been erected on the country roads near Tallahassee and in the outskirts of the city itself since the adoption of this resolution, but none have been erected in the residential districts. It is believed that the stand taken by the Chamber of Commerce on this important question will have its effect in time, and that property owners will have the courage to refuse permission to place billboards on the public roads.

Motor tourists have complimented Tallahassee's spirit in attempting to suppress the billboard nuisance, and have remarked how much it adds to the charms of the country around Tallahassee to have an open view from nearly every point. The nuisance will undoubtedly be abolished as soon as the public officials awaken to the fact that they have the power to suppress it without losing the votes of certain elements of the population. The Chamber of Commerce realizes that it requires vision, courage and constant effort to make a city of a town, and with the coöperation of the Women's Club of Tallahassee, is endeavoring to make and keep the capital city attractive.

MRS. F. R. S. PHILLIPS,

Former Secretary, Tallahassee Chamber of Commerce.

Waterbury Chamber Organizes Building and Loan Association

WATERBURY, CONN.—A "Build-Now" campaign conducted by the builders and lumber men of Waterbury, which had its headquarters in the Waterbury Chamber of Commerce, brought out the fact that there were hundreds of people in the city who were desirous of owning their own homes but were without the financial means necessary. Under these circumstances the officials of the Chamber saw the need of providing such persons with the facilities for financing building operations and recommended the establishment of a building and loan association.

After thoroly studying the subject, a committee of the Chamber of Commerce recommended a plan of organization, and the Board of Directors authorized the formation of a building and loan association. A group of representative citizens have agreed to act as directors of the association. Its organization will no doubt increase building activity in Waterbury to a consid-

erable degree, and give the man of small means the financial assistance he requires to provide himself with a home.

The Waterbury Chamber has just organized a campaign to instruct the public in the advantages offered by the Building and Loan Association to prospective home-owners and investors. It is hoped that this campaign will result in the sale of from 15,000 to 25,000 shares of the Association's stock.

THOMAS F. MOORE,

Assistant Secretary, Waterbury Chamber of Commerce.

Absentee Landlords Block Industrial Development in Kankakee Until Chamber Pays the Hold-up Price

KANKAKEE, ILL.—Kankakee is to have a new factory, a car repair shop that is guaranteed to start as soon as possible and employ at least 500 men. The location of the factory in this city was made certain by the raising of an industrial fund of \$16,000 within two days. Of this sum, \$12,000 will be used in getting the factory, while the balance of the fund will be retained for other industrial activities. It is of particular significance not only that all the subscriptions were made in two days, but that all except two of the subscribers paid cash and the two exceptions paid within two days following the campaign.

Another fact that should be emphasized is that the \$12,000 will not be spent by the city in accordance with the old-style bonus system. The owner of the car repair company decided upon a certain site containing approximately 65 acres. He agreed to pay an average of \$650 an acre for the land, but the owners of the three tracts demanded a greater price. As the owners resided outside the city, no pressure could be brought that would induce them to sell for the lesser amount, and the result was that the Chamber of Commerce faced the problem of raising the additional amount of money demanded for the land, or losing the factory.

The officers of the Chamber decided that inasmuch as the factory owner had offered what in their opinion was a fair price, the remainder of the money should be raised locally. The factory owner then agreed to deposit \$31,500 in cash as his payment in full for the land, and, further, signed an agreement drawn up by attorneys repre-



"What did the teamster see
In old days, driving his heavy loads
From farm to town, over hills and prairies?"



A Vision of BETTER ROADS

What did the teamster see
In old days, driving his heavy loads
From farm to town, over hills and prairies,
Through mud and flood and storm and washout,
By wood-roads and highroads and the great
National Highways from State to State,
His strong horses straining and sweating
through dust or mire—
What did that hardy teamster see
On those long, hard roads behind his
laboring team?

Across the years he saw a vision,
Prophetic, happy, haunting and inspired—
A Vision of Better Roads in the days that
were to be.

He saw broad, smooth highroads running
everywhere in a vast network over
the country,

Roads without dust or mud or weariness or
the constant labor of repair,

Roads pleasant and swift to travel,
Roads clean and safe and paved,

Leading to great cities, friends, business
and adventurous, delightful journeys,

All over this broad, beautiful land.

He saw himself and his wife going and
returning over these fair highways,

Making trips to town for shopping or
pleasure;

He saw his boys and girls going to better
schools, and better satisfied with
their home;

He saw an end to dreariness and monotony
and isolation;

He saw his produce carried quickly to
market; anything he needed brought
as quickly back to his own door;

He saw happiness, comfort and prosperity
in that Vision of Better Roads—

The vision of things which his energy and
resourcefulness and courage are today
bringing to pass.

It was "A Vision of Better Roads"
that brought forth Tarvia—which
has given smooth, dustless, mudless,
waterproof highways to thousands
of communities all over this vast land.

Tarvia
Preserves Roads
Prevents Dust

If you are interested in good highways, write at once
to our nearest office for information regarding good
roads that should interest every citizen.

New York	Chicago	The Barrett Company	Philadelphia	Boston
St. Louis	Cleveland		Cincinnati	Pittsburgh
Detroit	New Orleans		Birmingham	Kansas City
Minneapolis	Dallas	Nashville	Seattle	Peoria
Atlanta	Duluth	Milwaukee	Washington	Johnstown
Yakima	Youngstown	Toledo	Richmond	Lafayette
Bethlehem	Elizabeth	Buffalo	Syracuse	
THE BARRETT COMPANY, Limited	St. John, N. B.		Toronto	Winnipeg
Vancouver			Halifax, N. S.	

senting the Chamber which obligates him to refund all the money spent by the city in behalf of his factory if he fails to meet every obligation.

Plans for the factory have already been drafted and work is to be started as soon as the weather permits. The coming of 500 additional families will intensify the acuteness of the housing situation, and already a Housing Committee of the Chamber is planning to handle this problem, probably by the organization of a housing corporation.

E. A. WARNER,
Manager, Kankakee Chamber of Commerce.

EDITORIAL NOTE.—Who created the value in the vacant land for which an exorbitant price was asked? The community, not the absentee owner. There is no greater enemy of the chamber of commerce than the land profiteer. There are only two ways of handling him: if a local resident, he may be shamed into accepting a fair price; but, resident or non-resident, he can be curbed if the community cares to adopt a remedy similar to that employed in Pittsburgh and Scranton. See *THE AMERICAN CITY*, November, 1915, page 412; and November, 1919, page 433.

Disfiguring Poles and Overhead Wires Removed in Harrisburg

HARRISBURG, PA.—One plank in the program of work of the Harrisburg Chamber of Commerce for 1919 called for the removal of the overhead wires and unsightly poles from the business streets of the city. After a long and upright career, the big posts were retired last fall by the Bell Telephone Company (whose division offices are

located in Harrisburg), when the American Telephone and Telegraph Company's New York-to-Chicago line was placed beneath the streets of Harrisburg.

The pole line was built in 1891 and carried ninety wires, according to *The Telephone News*, each pole having nine cross-arms. The poles are seventy-five feet high.



THE SAME STREET AFTER THE UNSIGHTLY POLES HAD BEEN TAKEN DOWN

A few years ago one had to be replaced, and six giant chestnut trees were sacrificed before one was secured that did not break in falling. Forty of the ninety wires were those of the American Telephone and Telegraph Company. It was necessary to lay 12,019 feet of terra cotta ducts from the central office in Harrisburgh to Penbrook, a few miles away, to accommodate the new underground cable.

REED McCARTY,
Assistant Secretary, Harrisburg Chamber of Commerce.

Getting Bulletins Read

BRIDGEPORT, CONN.—The object in publishing bulletins of chamber of commerce affairs is obviously to furnish information to the members in regard to the organization's activities and to spur them to greater activity; in other words, the bulletins are printed to be read. In the Bridgeport Chamber's weekly bulletin, *Bridgeport Progress*, of January 10 are a few paragraphs that contain suggestions of possible value to other organizations desirous of arousing

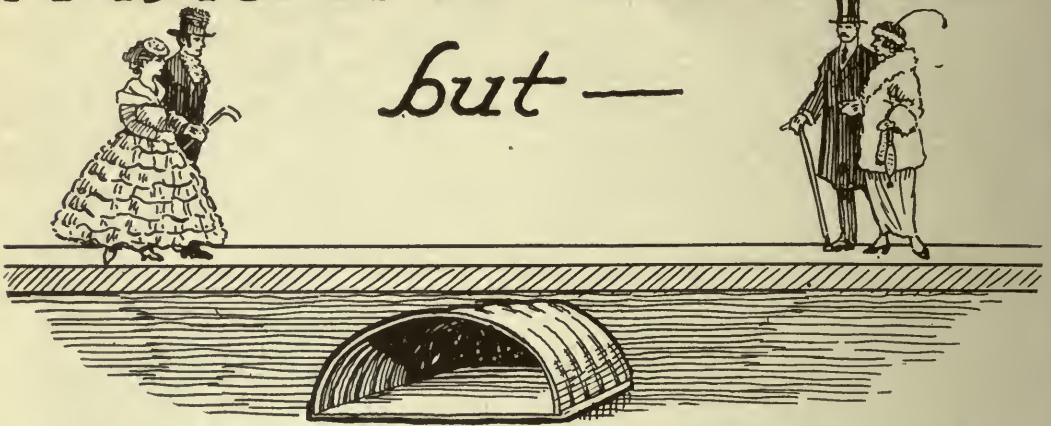


THIS IS THE WAY WALNUT STREET, IN HARRISBURG, PA., LOOKED BEFORE THE POLES WERE REMOVED

THE AMERICAN CITY

FASHIONS CHANGE

but —



CULVERTS SHOULD BE PERMANENT

FASHIONS and styles have changed many, many times since the first Newport Culvert was laid.

Newport Culverts are good for a long period of years. There is no particular pleasure in ripping up your roads every few years to replace defective culverts. Next time buy Newport Culverts and save all this unnecessary work, annoyance and expense.

Made from genuine open hearth iron. Government tests prove them 99.875% pure iron copper alloy. Absolutely rust-resisting. Their lasting qualities are an assured fact. Serviceable for every service. The half-round culvert is ideal for city service. Used by municipalities all over the country.

*Send us your address and we will tell you
how better culverts mean better roads.*

NEWPORT CULVERT CO.

542 WEST 10th STREET

NEWPORT

KENTUCKY



a more lively interest in their house organs. The article is reproduced herewith:

File in Your Pocket

You can increase the circulation of this bulletin by filing it in your pocket.

If you have the habit of "carefully preserving" all your mail it may seem a bit careless to suggest this informal method of filing.

We have a fear that what is filed is "filed but not read." We have a hope that what is written on these four pages may be read—"if it is handy."

So—put it in your pocket. Read it at lunch—on your way home—while you are waiting for dinner.

And—when you finish, pass it to Mrs. Active Member, or to any friend you meet. It is written to spread.

In the First Person

It may not be orthodox to use the first person in speaking "thru these columns," but for the sake of simplicity and directness we shall frequently use that form of address.

So that there may be no misapprehension as to the antecedent of "we," let us say that it is your Board of Directors. You have elected them to act for you in directing the activities of your organization and they are not only responsible parties, they are "the responsible parties."

A kick in time saves nine, so fellow members are invited to kick at the source—offers of service find welcome at the same stand.

Ten Minutes per Week

The average man reads at the rate of 250 words per minute. He can read this issue of *Progress* in ten minutes.

Ten minutes per week will review the work of the current week, will present the calendar of events for the coming week, and will give in tabloid form some phase of the city's condition or activities which it is believed may not be known generally or accurately.

A ten-minute audit of organization affairs is bound to put committees "on their toes."

SEWARD B. PRICE,

Secretary, Bridgeport Chamber of Commerce.

Greenfield Housing Plan Prevents Speculative Trading

GREENFIELD, MASS.—Last fall the Greenfield Board of Trade was reorganized into the present Chamber of Commerce, and the first thing the new organization set out to accomplish was to relieve the housing shortage. The situation had become very acute in Greenfield, and many doubted the Chamber's ability to do anything with such a big problem. To these "Doubting Thomases," however, the Chamber lent a deaf ear. A Committee on Housing was appointed, which, after making a careful study of other housing schemes, especially

the Bridgeport plan, prepared and submitted a comprehensive report containing recommendations for the formation of the Greenfield Homes Corporation, to be capitalized at \$250,000. A prospectus giving the thirteen objects of the proposed corporation was also issued.

Early in January, 1920, the committee's report was accepted by the Board of Directors of the Chamber of Commerce. At a meeting of manufacturers and merchants called soon thereafter, the report and prospectus were read and the form of corporation briefly explained. Subscriptions were asked for at this meeting, and inside of twenty minutes \$103,400 had been pledged; \$75,000 more has since been promised, and the entire issue of a quarter of a million dollars will be in hand before the first house is built early this spring. The Greenfield Homes Corporation was organized forthwith, and a capable paid manager appointed.

The plan is to build as many homes thru local contractors as possible, not only to secure their support of the movement, but in order that the building material may be purchased in large quantities at wholesale prices. One medium-sized tract of land has already been purchased, and this is being laid out along advanced garden suburb lines by John Nolen, of Cambridge, Mass. It includes tennis courts, a small playground and a wading pool for children. Another tract will be bought soon. At least one hundred houses are to be erected on these two tracts during the coming summer.

Attention is called to two important provisions in the prospectus, the seventh and the twelfth, which were also included in the certificate of incorporation. The seventh provision reads:

"To prevent speculative sale or trading of houses on the part of purchasers owning only a small equity in their property by taking back an option on houses sold on easy terms, to remain in force one year or until 20 per cent of the purchase price is paid."

The promoters want wage-earners to buy the houses and live in them, and it is believed that this provision will prevent speculators from getting hold of the property and depriving the very individuals for whom the houses are being built from occupying them.

The twelfth provision reads:

"To give the refusal to any industry sub-



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Making Quick Get-Aways on Goodyear Pneumatics

***THIS** letter was written seven months after the tires were applied on two trucks. "Our Goodyear Cord Tires still contain the original air. They are the most perfect non-skid tire—it has been unnecessary for us to use any non-skid devices whatever. We find from experience that this tire gives a maximum of resiliency, so essential in making those quick get-aways which every Fire Department must make."—Chief, Texarkana, Texas, Fire Department*

On fire trucks the full advantages of Goodyear Cord Tires are noticed on practically every run, in the cushioning and in the traction.

As noted in the Texarkana letter above, the sharp blocks of the All-Weather tread cling fast to the road and curves, making runs less dangerous, more sure.

The remarkable resiliency of the big Cords saves the truck and its crew from the smashing and rebounds of crossings, ruts and bumps.

These tires satisfy, too, because of their tough resistance to cuts and wear; their powerful construction protects our good name.

Generally, fire trucks using Goodyear Cords make greater speed with safety, they arrive at the fire more quickly, than when on solid tires.

Records of many sets of Goodyear Cord Tires on fire trucks, everywhere, can be obtained by writing to The Goodyear Tire & Rubber Company, at Akron, Ohio.

GOODYEAR

CORD TIRES

When writing to Advertisers please mention THE AMERICAN CITY.

scribing to a large amount of the stock of the Corporation on a number of houses up to the point where the amount of the second mortgages carried by the Corporation will equal the amount of their stock subscription."

This provision protects the manufacturer who owns a large block of the stock of the Corporation and who wishes to provide housing accommodations for his employees. It assures him a certain number of houses and makes it possible for him to do quite as much for his employees as if he were building the houses himself.

BENJAMIN H. BONNAR,
Manager, Greenfield Chamber of Commerce.

The Cheyenne Plan of Housing

CHEYENNE, WYO.—The Cheyenne plan was first conceived by the Industrial Club (recently reorganized and now known as the Cheyenne Chamber of Commerce) in 1917, but the war curtailed building operations to such an extent that it was not carried out until early in 1919, when work on the project was resumed. A home-building fund of \$100,000 was raised among the leading business men, who subscribed to it with a sincere desire to supply homes for those who needed them rather than from a mercenary motive. As soon as this sum had been raised, the Cheyenne Home Builders' Association was formed with seven directors, and incorporated for \$250,000. One of the directors was an editor, another an architect, another a wholesale merchant, and the other four were capitalists and bankers. The officers donated their services, and the lawyers did all their work free. The local newspapers furthered the project by publishing free of charge the notice of incorporation and extensive publicity articles.

The first thing the Home-Builders' Association did was to secure options upon vacant city property before any one was aware of its plans, and then bought a number of the lots at a low price. The object was to build bungalows on these lots at the lowest possible figure and sell them at cost. Bids were secured from builders who agreed to build the houses in quantity and order their material in car-load lots.

Twenty-seven houses were built at that time; one contractor built twenty-four and another three. They sold for from \$3,600 to \$4,500. The profit in no case exceeded \$100. The receipts from the sales and any

small profits that were realized were turned back to the directors of the Home-Builders' Association to be reinvested in more houses and lots. The bungalows were sold on easy payments of \$500 down and \$40 per month on the "Pay-as-you-rent" basis, the purchaser paying the taxes and the water and insurance rates. Cash in full was paid in some instances. Every house was sold long before it was completed, and some families moved in before the houses were finished.

The bungalows are one-story, five-room structures. They are heated by furnaces and lighted by electricity, and have all the street improvements, such as sewers, sidewalks and curbing.

The work will be carried on in 1920 on a larger scale and until the need is no longer urgent, the present plan being to construct immediately one hundred houses. The value of the houses constructed last year has increased so much that the banks will readily give loans to carry on the work indefinitely. When the need for houses has been fully met, the original subscription of every subscriber will be returned to him.

FRANK J. WIFFLER,
Secretary, Cheyenne Industrial Club.

Experts in Hospital and Institutional Planning and Operation Furnished

It may be of interest to the readers of THE AMERICAN CITY to know that the Hospital and Institutional Bureau of Consultation, located in New York City and conducted under the directorship of Henry C. Wright, has made available to those desiring it advice regarding every phase of hospital and institutional plan, equipment, organization and operation. To quote from the prospectus:

"It is difficult for one person to give competent and wise advice on each department of a large hospital or institution. In planning, frequently aid is sought from firms that sell equipment. Such firms may yield to the natural temptation of advising too much equipment and space necessitated by it. The best advice comes only from disinterested specialists. Even the advice of these disinterested specialists needs adjusting to bring about a proper correlation between departments. Each specialist in his enthusiasm is inclined to feel that his department is the most important and requires abundant room.

"The Bureau brings together and harmonizes the advice of various specialists so that

Contractors are quick to appreciate the value of improved equipment.

The great resiliency of the Kelly-Springfield Caterpillar tire, its surefootedness under all conditions and its consistent mileage performances have made its economies so evident that leading contractors all over the country are adopting it, many using Caterpillars as exclusive equipment on their trucks.

Caterpillars save truck depreciation, decrease repair costs, cut down gasoline and oil consumption and give amazing traction.

They will both increase the efficiency of your trucks and enable them to operate more economically.

Kelly-Springfield Tire Co.

New York, N. Y.



KELLY SPRINGFIELD TRUCK TIRES

the institution as a whole will be properly balanced and proportioned to the task that it is to perform, and to the budget available.

"Some of the most competent men and women on the various departments and types of hospitals and institutions available in the United States have consented to act as consultants. Not one but has a national reputation. In all cases these men and women now occupy professional or administrative positions. The names of all the consultants to be used in connection with any proposed project

will be given upon application. Problems of fiscal control, organization and administration will be in personal charge of the Director."

The office of the Bureau is located at 289 Fourth Avenue, New York. Copies of the prospectus, in which the organization, methods and procedure of the Bureau are outlined in some detail, will be cheerfully supplied to those requesting them.

Who Needs a Job?

By Marcel S. Keene

Lieutenant-Colonel, U. S. A., Retired; Director, Bureau for Employment of Ex-Service Men, New York City

THE reemployment question, in so far as it affects one-time service men, was so serious during the months of January and February that the various civic and commercial organizations in New York City were asked to take a job census for the purpose of opening up positions of various kinds for men who had worn the uniform. The census was taken, and opened up a few hundred jobs, but not so many as were hoped for. Consequently, the Bureau for Employment of Ex-Service Men is again appealing to employers of labor to send notices of vacant positions to its headquarters at No. 129 Worth Street (telephone Franklin 2283).

The statement that the job situation is serious nearly always provokes an argument whenever the writer makes it to the average high-type business director. "Why, I thought there was a shortage of labor," he replies. "I have been waiting days on a little painting job I want done," or, he has been waiting for printing or plumbing work, and the excuse given to him is "We can't get the men." But the master plumber or painter is telling the truth. There is a glut of men, and there is a scarcity of men. The explanation is found in the *types* of men concerned. Any expert mechanic can have any one of a dozen jobs that are open, but the unskilled man (not of the pick and shovel variety) who wore the uniform is having a terribly hard time to get placed.

About four hundred such men apply for work at the Bureau each week. Before the war they were parcel-wrappers in de-

partment stores; checking-clerks on freight piers or in warehouses; white goods salesmen in small stores; doormen; taxicab starters; general filers and clerks. In short, they were engaged in occupations requiring but little education or technical knowledge. As they were twenty-one or over, they were called in the draft, and their positions were filled either by girls or by youths between sixteen and twenty.

When these men went to war they were for the most part pale and anemic and content with anything that gave them board and lodging. A job was a job, and its nature mattered very little. When these men came back, they had been built into strong men physically. Out-of-doors and army or navy drill and regular habits of life had made them over. Everything mattered to them a great deal. They had the natural ambition which comes with a healthy outlook on life and they had learned the responsibility of citizenship under the weight of a musket and on board ships or in the trenches. So the new wine came back to be put in the old bottles!

The average man was confronted with one of several situations when he entered civil life again. He got his old job back with an increase in pay corresponding to the ever-rising cost of living. But this man is not among the 400 new faces who fill the Bureau each week. The man who comes here got his old job back at the old pay prevailing in 1917 and couldn't live on it; or, he got another job offered him under the woman or youth who succeeded him in 1917; or he was turned away point



What are the Essentials of a Correctly-Designed Pavement?

THE years have proved the following to be the fundamental features of a correctly-designed pavement.

1. It must have a strong supporting foundation.
2. This foundation must be protected from the destructive action of traffic by a resilient wearing course which can be economically maintained in perfect condition.

The supporting foundation may be built in various ways of various materials, the primary requisite being sufficient mass and strength to support the traffic load.

The secret of long-wearing roads is resiliency—the resiliency of the finest asphalt—the resiliency which comes back like live rubber under the impact of heavy traffic.

We are prepared to undertake contracts for immediate or yearly requirements for Sinclair Asphalt for all types of asphalt pavements.

Your inquiries will receive prompt attention.

SINCLAIR REFINING COMPANY
The Asphalt Sales Department, Chicago

SINCLAIR ASPHALT

**The Asphalt of
100% Vitality**

blank when he returned, with the statement that there was nothing for him. Then there is still another type of youth—the one who, when taken in the draft, was not overly ambitious, but in whom ambition has been instilled with his healthier body and healthier outlook. This type of man had no definite connections before the war,—perhaps he wasn't old enough to have made them,—so he is “up against it” now.

There is another type of man who comes to the Bureau with whom I sympathize deeply. He is the married man who had to take the first thing that came along when he got out of the army, in order to earn meat and bread. Of course, the story of the Canadian major who faced that predicament is famous. He was found in Brooklyn washing windows for a living. Now he is an executive in a Chicago bank. Included in this category are many men of unusual executive ability. During the war

they handled large bodies of men successfully; they administered undertakings which make ordinary peace-time jobs look minute beside them; yet they are forced by circumstances into the most humble and lowly jobs. It is all right to say that any man who has a job should thank God and be satisfied, but in practice it is different. He may thank God for bread and meat, but he isn't satisfied unless he has the right kind of outlook, something with a future to it; and if he is satisfied, he isn't the right sort of man.

The writer believes that the sooner these men are taken care of, the quicker we shall solve the problems of industrial unrest. The man who has known the severest test of his obligation to citizenship should be the bulwark of safety around our nation. If he confuses ingratitude and selfishness with “capitalists,” his mind will become a fertile field for the seeds of the agitator.

The City's Legal Rights and Duties

Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Classifying Cities—Invalid Regulations

Where statutes classify municipalities by population, the basis to be taken is some official enumeration, where the statutes do not otherwise provide. The federal census is usually adopted. Under an act empowering cities having populations of more than 5,000 to levy certain taxes on moving picture theaters, a city having less than that population, according to the last federal census, could not levy such tax, altho an unofficial enumeration made by school superintendents showed a larger population. (North Carolina Supreme Court, *State vs. Prevo*, 101 Southeastern Reporter, 370.)

Establishment of Street Grades

An owner of a lot abutting upon a street cannot recover from the city for damage caused by reducing the street to the grade first established by the city. But the city cannot delegate to a committee, official or

any one, its statutory power to fix a street grade. The council may delegate all ministerial power, such as surveying, investigation, and computation, and may take the advice of attorneys, engineers, and others, but the final determination as to what grade shall be established must be by the council itself. (Colorado Supreme Court, *City of Leadville, vs. McDonald*, 186 Pacific Reporter, 715.)

No City Control of Interstate Commerce

One operating a motor vehicle for transportation of passengers from a point in Pittsfield, Mass., to a point in Albany, N. Y., doing no local business in the former city, is not subject to a regulation adopted by that municipality, requiring one using an automobile for the transportation of passengers from place to place in the city to obtain a license. Construed otherwise, the regulation would interfere with the exclusive province of Congress to regulate

Get These Free Suggestions on Concrete Improvements

ALPHA CEMENT is manufactured with the greatest of care to insure full binding power and uniformity. The entire manufacturing process is under the strict supervision of chemists and chemical engineers.

Hourly tests are applied, and every bag of ALPHA goes out guaranteed to fully meet standard specifications. Test it, if you like, but you don't have to.

But not much space is given in ALPHA literature to talk about the product. ALPHA literature is "Service Material." Our 96-page illustrated Handbook, ALPHA CEMENT, How to Use It, our magazine ALPHA AIDS and our long series of Service Sheets and Special Bulletins are given up almost entirely to directions about the proper use of cement and how to make permanent and handsome concrete improvements.

Information of the most practical sort is available on the following list of subjects:

Workingmen's Homes	Storage House
Walkways & Driveways	Smoke House
Concrete Roads	Hog House
Bridges and Culverts	Poultry House
Foundation and Hatchway	Dipping Vat
Gutter and Curb	Tanks and Troughs
Storage Cellar	Piers for Small Boats
Small Warehouses	Garden Furniture
Spring House	Greenhouse
Small Dam	Coal Pocket
Milk House	Post and Walls
Ice House	Walls, Sills and Lintels
Manure Pit	Garages and Runways
Septic Tank	Overcoating of Old Dwellings
Oil Storage Tank	Porch, Cellar and Stable Floors
Tennis Court	Warm-weather Concreting
Inclosure Walls	
Barn and Silo	
Corn Crib	

Ask for the Sheet or Bulletin that interests you most, also for a copy of the Handbook. All sent free of cost or obligation if you live East of the Mississippi. We are obliged to ask inquirers out of our sales field to send fifty cents to cover the printing and mailing expense of this material.

ALPHA PORTLAND CEMENT CO.

General Offices: EASTON, PA.

Branch Offices: New York Boston Philadelphia
Pittsburgh Baltimore Savannah



interstate commerce. (Massachusetts Supreme Judicial Court, Commonwealth vs. O'Neil, 124 Northeastern Reporter, 482.)

City Treasurer's Office to the Highest Bidder

Novel provision of the charter of the city of Corpus Christi, Tex., is held by the Texas Court of Civil Appeals to be unconstitutional in so far as susceptible to interpretation as providing for farming out the office of city treasurer. (*Mireur vs. City of Corpus Christi*, 214 Southwestern Reporter, 528.) The provision includes the following clauses:

"The office of city treasurer shall be *let by contract* to the highest and best bidder, in the discretion of the city council, and in determining the highest and best bidder, the highest rate of interest to be paid upon daily balances and the value of the bond tendered shall be the criterion that shall decide."

The Court takes this rap at the provision:

"The section providing for the selection of a city treasurer probably has no parallel in the city charters of the country, and if, as contended by appellants, such treasurer may be a corporation and purchase the office thru his or its bid for the use of the city money, we have a condition or state of affairs repugnant to purity of government and destructive of the principles upon which officers should be chosen in democratic communities. While there is language in the section quoted indicative of an intention to create an office, we cannot conceive that a legislative body in this country would lend its countenance to selling an office to the highest bidder, as would an auctioneer sell goods and chattels placed in his hands for sale. No such law could be sustained under our Constitution which would authorize or permit the sale or farming out of an office. A statute should be so construed, if possible, as to avoid absurd and unjust consequences, and such construction should be adopted which comports with the general public policy of the state, rather than that which would encourage such policy and destroy its ideals of government."

Municipal Liability for Negligence

The Ohio Supreme Court has reversed itself on a point of law relating to the liability of Ohio cities for injuries committed against third persons by negligence of municipal employes in the course of performing ministerial acts of employment. Overruling its decision in the case of *Fredrick vs. City of Columbus*, 51 Northeastern Reporter, 35, the Court holds in the case of *Fowler vs. City of Cleveland*, 126 Northeastern Reporter, 72, that if defendant city's motor hose truck was recklessly driven

along a street in returning from a fire, the city is liable for resulting death of a pedestrian. In the course of a lengthy opinion on the subject, the Court says:

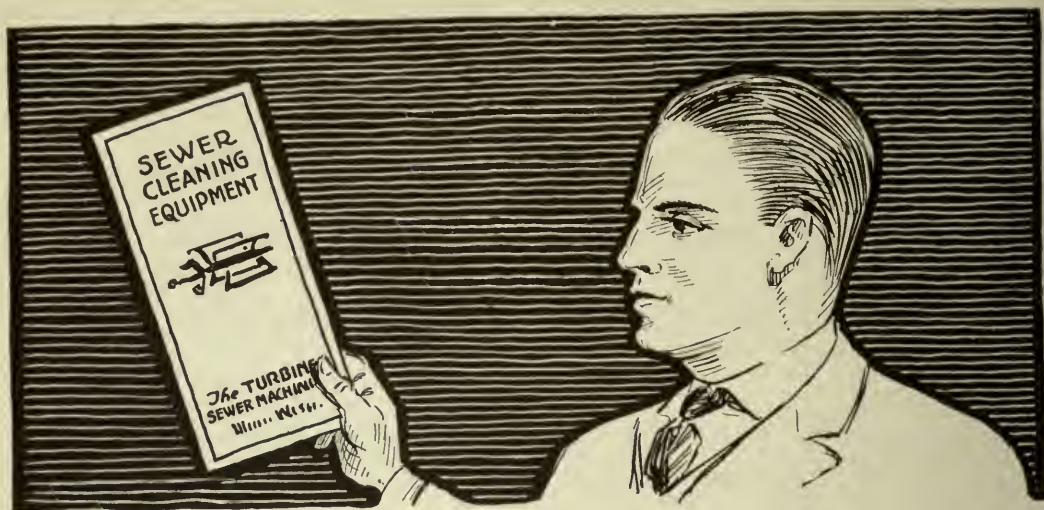
"It would, of course, be admitted the municipality was under no obligation to provide any fire department, and that the matter of deciding whether it should have a fire department, and, if so, what sort, and the extent of the services that the city would render on the general subject, is governmental. No complaint could be made concerning the exercise of that governmental power. But when it has determined all of these matters, and has placed an instrument upon its streets which, when negligently and carelessly operated, is dangerous to the lives of its citizens, then the operation of this dangerous instrument, while governmental, as being operated by the government for the public welfare, yet is ministerial and proprietary. It is performed by agents who as such have no part in the decision or determination of the sovereign will. Their relation is precisely the same as the agent of a private person. When the functions of government were negative rather than positive, the results of non-liability for any and every act did not attract close attention or inquiry. To adhere to the ancient rule in the presence of existing relations would seem to involve the obvious contradiction that the state, which is formed to protect society, is under no obligation, when acting itself, to protect an individual member of society. Such conceptions of sovereign prerogative are not only illogical, but they offend the spirit of our institutions. We have successfully striven, under a system of checks and balances, to reconcile liberty with authority. Authority should be reconciled with justice."

Advancements to Contractors

The builder of a water system for a city, having been partly paid in advance thru delivery to him of bonds of the municipality, was chargeable, in a suit brought by him to recover a balance due on the contract price, with interest accruing on the bonds during the time that the bonds were outstanding before payment was due. (*Oregon Supreme Court, Oregon Engineering & Construction Co. vs. City of West Linn*, 185 Pacific Reporter, 750.)

"Majority of Electors"

A statute providing for the acquisition of a public utility, when authorized by a "majority of the electors" of a municipality, did not require concurrence of more than a majority of the qualified electors of the municipality voting at an election on the question. (*South Carolina Supreme Court, Harby vs. Jennings*, 101 Southeastern Reporter, 649.)



Free Book on Sewer Cleaning

THIS seventy-two page book including dozens of photographs will be sent free of charge to all those interested in sewer cleaning work. The problem of sewer cleaning is one which confronts the people of every city. The Turbine Sewer Cleaning Machine has effectively solved the problem. It makes little difference how severely clogged up a sewer may be—the Turbine will clean and scour it and make it like new. Our work is guaranteed—you take no chances.

*Send us your address for our
free book on sewer cleaning.*

Turbine Sewer-Machine Co.

195 ELEVENTH ST.

MILWAUKEE, WIS.

Title to Plant Equipment

A contract under which the seller of machinery to a contractor for installation in a municipal plant reserves title until payment of the purchase price is binding on the city, where the city has actual notice of such reservation of title before actual installation of the machinery. But it may be that mere constructive notice imparted by recording of the contract would not render the contract valid as against the municipality. (Washington Supreme Court, *Allis-Chalmers Mfg. Co. vs. City of Ellensburg*, 185 Pacific Reporter, 811.)

Charges of Public Service Corporations

Where a gas franchise granted by a city for a term of years provides for a maximum schedule of charges, the grantee gas company will not be permitted by the courts to increase its charges beyond that maximum, on the ground that changed conditions make the contract confiscatory of the company's revenues, unless it appears that, taking the entire franchise period as a whole, the contract will prove unremunerative. Cities have no power to fix rates that may be collected by public service companies, excepting as such power may have been clearly conferred by the state, in which the authority primarily resides. Charter authority in a city to control its streets or to approve the location of pipes, mains, etc., does not empower it to fix such rates, and where a franchise contract purports to exercise such power it will not be upheld as against an increase of rates rendered necessary to give the public utility a fair return in its investment. (*United States Circuit Court of Appeals, Sixth Circuit; Knoxville Gas Co. vs. City of Knoxville*; 261 Federal Reporter, 283.)

Municipal Home Rule

A decision of the Michigan Supreme Court emphasizes limitations upon home rule powers of municipalities. The conclusions are stated in the recent case of *City of Kalamazoo vs. Titus*, 175 Northwestern Reporter, 480, wherein the plaintiff city failed to establish power to regulate the rates at which gas might be sold by a local public utility company, after the company's franchise had expired. The salient parts of the opinion are as follows:

"The charter provision, the ordinance, the argument, made for the city, reflect a popular interest in, and, we conceive, a popular misunderstanding about, the subject of home rule, so-called, in cities. There is apparently a widespread notion that lately, some way, cities have become possessed of greatly enlarged powers, the right to exercise which may come from mere assertion of their existence and the purpose to exercise them. Whether these powers are really inherent in the community but their exercise formerly was restrained, or are derived from a new grant of power by the state, or may be properly ascribed to both inherent right and to a new grant, are questions which do not seem to bother very much the advocates of the doctrine that they in any event exist. On the other hand, there is expression of grave doubt whether, in the view of the law, there has been any enlargement or extension of the subjects of municipal legislation and control or of the powers of cities except as those subjects and powers are specifically enumerated and designated in the Constitution itself and in the home-rule act.

"Political experiment has not yet produced in this state the autonomous city—a little state within the state. We have a system of state government, and the right of local self-government is, and always has been, a part of the system. We have, as we have always had, a state Constitution, the fundamental law. By it, now as formerly, the legislative power of the state, and all of it, is reposed for exercise in a Legislature, save only as reserved by referendum and initiative proceedings, which are not here involved. * * *

"We might go further and point out, what is true, that power to regulate rates of public utility companies is not a power necessary to local self-government, denial of which, or interference with the exercise of which by the Legislature, would be interference with local self-control."

The decisive point reached in the opinion is that great authority conferred on a city by the Legislature to provide for the use, regulation and control of streets does not authorize a city to fix compulsory gas rates.

"The gas company derives its right to make and sell gas, not from the city, but from the state," says the Michigan court.

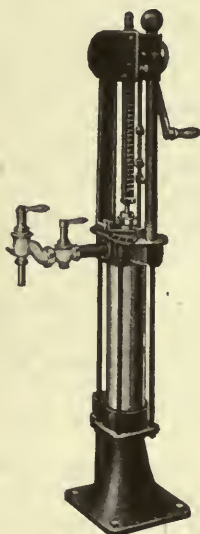
Void Municipal Bonds

Where invalidity of a bond issued to a street improvement contractor by a municipality is apparent on the face of the bond, it is void, not only in his hands, but also in the hands of an innocent third person to whom he may have transferred it. (*California District Court of Appeal, Coleman vs. Spring Construction Co.*, 182 Pacific Reporter, 473.)

THE GASOLINE WAS SAFE IN THE **BOWSER** ESTABLISHED 1885 Underground Tank!!



View after the fire.
Note the condi-
tion of the
Bowser
Pump



The Bowser Fig. 41
Installed in the
above garage

QUOTATIONS MADE AND ORDERS ACCEPTED
SUBJECT TO UNAVOIDABLE DELAYS

FACONITE, CHROME, SLICK AND FIRE
CLAY MATERIALS FOR ALL FURNACE WORK

C. B. STONE, Pres. &
J. H. FULLER, V. Pres.
C. E. HARTNEY, Sec'y & Treas.

The Bowser Co.
FIRE BRICK

OFFICE, ROCKFELLER BUILDING
CLEVELAND, O.

ADDRESS ALL COMMUNICATIONS TO
BOWSER PUMP
ALL REPAIRS
R. M. O'NEILL
CHIEF
DEAR BOWSER
CHIEF

BELL TELEPHONE "MAIN 2644"
CABLE ADDRESS
"BOWSER" CLEVELAND
O. U. S. CODES.

December 2, 1919.

S. F. Bowser & Co., Inc.
Fort Wayne, Ind.

Gentlemen:

In regard to the standing of your Bowser Pump in fire at my house November 11th I am very glad to say that although the pump itself was burned out of shape, the tank of gasoline in the ground within 8 ft. of the pump did not explode, although the firemen were very much afraid that it would and had removed from my house all of the furniture, expecting it to go at any time.

After the fire was over and we installed a new pump, we were able to use the gasoline in the tank. I consider myself very much in luck that this gasoline was installed in one of your outfits and I give credit to same for saving my house when the garage which was attached was almost completely destroyed.

Yours very truly,
G. B. Stone

CBS:MC

The incident illustrated above is but another example of the fire and explosion proof qualities of Bowser Gasoline Storage Systems.

We will be glad to place at your disposal our corps of engineers in solving your oil and gasoline storage problems. It involves no obligation on your part.

S. F. BOWSER & CO., Inc., Fort Wayne,
Ind., U. S. A.
S. F. Bowser Co., Ltd., Toronto, Canada

A New Method of Air Conditioning in School Buildings

The Use of Ozone to Remove Odors and to Revitalize the Air

By E. S. Hallett

AN increasing stress is yearly being placed upon the housing conditions of our public schools as it is realized that the health and comfort of the child must greatly influence his development. Schoolrooms are occupied to their capacity every day, a condition that accentuates every defect that may exist.

More than two years ago, the writer, while making a study of the heating and ventilation of the St. Louis schools, was struck with the enormous waste of heat that passed up the vent stacks of all modern buildings. Seven or eight changes of air per hour were being delivered, all of which was discharged from the building after passing once across the schoolrooms. In the face of all this cost, many teachers complained more or less regularly of the heating system. It was apparent that the most nearly perfect system was not satisfactory to either occupant or operator.

Air conditioning pertains to both the health and the comfort of the individual. The popular mind recognizes only the latter. The health will be affected by the kind of air breathed, while comfort depends largely upon the effect which the air has upon the body surface. It is important to bear this distinction in mind. A bad odor from a harmless chemical starts an alarm of bad air, whereas a deadly vapor without odor is accepted as good ventilation. The well-known test recently made by enclosing several persons in a closed box until the air was oppressive to the subjects, resulted in no improvement in the comfort of the men when breathing pure air thru tubes from the outside. The experiment being reversed so that fresh subjects breathed impure air thru tubes from the inside, resulted in no discomfort.

What is that element or condition of the salt air or mountain valley that is so healing to the invalid and so delightful to all? It is not dryness, it is not lightness due to high altitudes, nor variation in amounts of oxy-

gen or carbon dioxide; it is simply the presence of ozone, or atomic oxygen.

Ozone is a highly active form of oxygen. Its function, whether in revitalizing the air of a school, or in purifying the water of swimming pools, or in the several medical uses, is that of oxidation. Oxidation may be mild and healing, or it may be terrific conflagration. Ozone, on account of its highly active chemical affinity, must be handled with a full realization of its nature. In this respect it is only like many other of the beneficent resources of nature. On account of the great difficulty of making quantitative analysis of ozone in the low concentrations required in ventilation, there has until now been no guidance for its practical use. It is too low to be rated in percentages. The determinations in nature on the so-called ozone days in those places where it is found, is roughly about one part in a million of air. In such places there is no ozone odor. The air simply feels fresh.

Ozone has until recently been produced only by the electric spark of static machines, but when produced by the spark or arc, nitrous oxide and perhaps other nitrogen compounds are produced, which are objectionable in ventilation. The improved apparatus now produces ozone without noise or any moving parts, and at a cost so small as to be negligible. The current required for the ventilation of a 24-room school is about 700 watts.

Ozone is a germ destroyer and leaves no injurious residue. We have sought a means of sterilizing the water of the air washer to prevent the spread of disease. We have sought a means of renovating air ducts to remove age-long smells in old buildings. Ozone accomplishes these results perfectly.

It is noticed that the tendency in recent times is toward the scattering of the heating plant, resulting in added expense and inconvenience, all to avoid the use of horizontal ducts in the system. It has even been proposed to construct the air conduits re-

Make Streets Clean

"Studebaker Model"

FLUSHING and SPRINKLING UNITS



Forty feet from curb to curb—sand filled brick pavement—cleaned in one trip with three nozzles.

The machine has four nozzles which can be used discharging one, two or three flushing streams at the same time.

Removing the heavy accumulation of Winter or the lighter dirt of Summer is within the range of this machine due to the adjustable nozzles and the independent control of the pressure.

A horse-drawn uniform pressure flusher is provided where conditions do not justify investment in a motor flusher but where economical, efficient and sanitary street cleaning is desired.

Inquire of any motor truck manufacturer or ask the truck dealer in your city for complete information on "STUDEBAKER MODEL" flushing and sprinkling units mounted on their trucks, or address

Municipal Supply Company

South Bend, Indiana

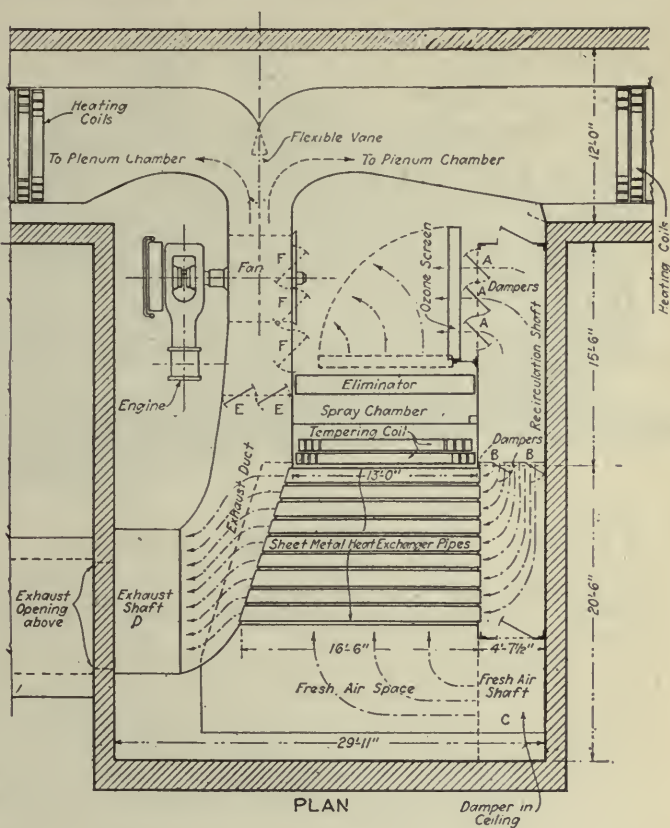
quired for a heating system so that they may be thoroly washed out. The use of ozone is equivalent to burning them out—rendering them perfectly odorless and sanitary.

Upon making a search of the literature on the practical working of ozone in school-rooms, it was found to be wanting in this country. Quite extensive use has been made, in ventilation other than in schools, in Germany, France, and in the subways of London, and all with highest satisfaction. It was necessary, then, for the writer to carry out tests that would have value, and under such medical supervision as would inspire confidence. Search was also made for ozone apparatus which would produce pure ozone and under such control as would determine proper concentration.

It happened just at this juncture that Dr. Stewart, the head of the hygiene department of the Board of Education, St. Louis, came to the building department with a complaint from one of the down-town schools that the air was so bad in some rooms that certain teachers threatened to resign on the advice of their physicians.

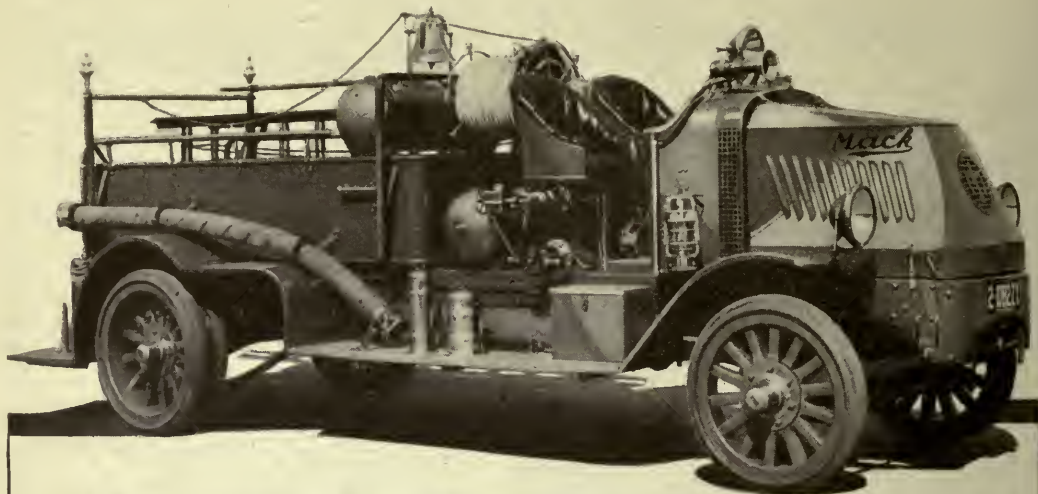
The First Experiment

The school in question was equipped with a plenum heating system with air washer in good order and the full quota of 1,500 cubic feet of air per minute to each room. An examination was made of all conditions, and the ventilating apparatus was found to be perfect in operation, but the children in this district were from families of foreigners who never bathed. It is a fact that many were sewed up for the winter. They ate garlic and such foods, and it was this highly odoriferous condition that was causing the complaint. There was, in addition, a prejudice against the heating system and the department in general, because they



were not permitted to open windows in cold weather. The writer proposed to the hygiene department that the ozone experiment be started in this school.

The apparatus was set up in the air passage between the air washer and the fan, and regulated to produce just sufficient ozone to be barely detected by the odor on entering the building, but not enough to make one conscious of an odor. The result was the immediate disappearance of all the stuffy condition and bad smells complained of. The remarkable thing was that every teacher and the principal pronounced the ventilation perfect. They stated that the conduct of the children as to lessons and behavior was noticeably better. No drowsy afternoons followed. Teachers stated they were as fresh at the close of the day as in the morning. Colds and coughs nearly disappeared. No contagious disease developed during the six weeks' trial, altho influenza was epidemic at this time. On several occasions a check was made on attendance, and not an absentee was reported on account of sickness.



Here are the Reasons for MACK Dominance

Features of the Mack Rotary Pump:

Lateral Intake and Lateral Discharge. This method of handling the water insures a *smooth, steady flow*. Pulsation, and Water Hammer is eliminated. The result is *more gallons per horse-power*.

The Mack greatly exceeds the Underwriters' demands by making delivery of 12 gallons per minute per horse-power at 120 pounds Pump Pressure.

Hardened cut-steel spur gears *running in clean oil* relieve the bronze "water gears" of all driving strain. This is a valuable feature as it minimizes wear.

Low pressure packing in the stuffing boxes cuts down friction loss and increases the efficiency of the pump. The Mack Rotary Pump is the only one in which the low pressure packing can be successfully used

The building of this pump was not an ordinary problem. The designers of the Mack Rotary Pump set themselves to the task of perfecting a pumping unit which would compare favorably with the mighty Mack Motor and Chassis. *That* was the problem.

The result is well-known to every user of Mack Motor Fire Apparatus.

INTERNATIONAL MOTOR COMPANY, NEW YORK

"PERFORMANCE COUNTS"



The building was constructed to permit perfect recirculation of the air, but the fresh-air intake was closed down to 2 inches, and the door to the basement was opened and the air drawn thru. The economy thus gained was about 25 per cent in coal. During the period of influenza epidemic of February and March, 1919, the attendance in this school was more than 3 per cent higher than the general average for this school.

Trial in a School With Complete Recirculation of Air

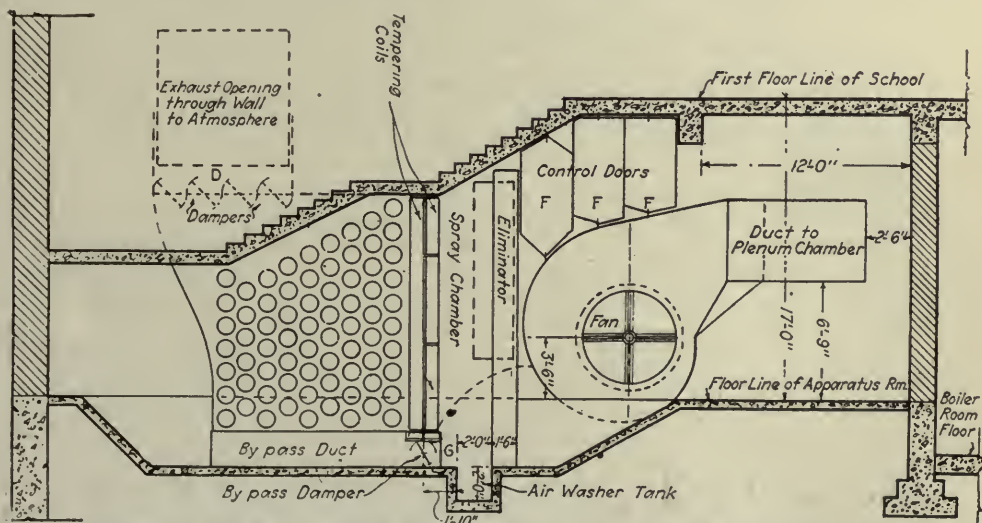
The experiment was then transferred to a colored school having a plenum system with the Zellweger air-washing fan and with complete recirculation of the air. The ozone machine was set up just back of the fan, the ozone acting upon the water of the air washer as well. In this test the pupils and teachers were weighed weekly and a close inspection was made by the staff physician of the hygiene department. The data from the weighing were interesting and instructive. About 75 per cent of the children gained in weight, an average of about one pound each. About 20 per cent showed no change, and about 5 per cent lost weight. Several very fat girls weighing about 175 pounds each lost weight, from 5 to 8 pounds. No indication of any illness or discomfort was noted. The principal was an old man, perhaps 70 years of age. He weighed 218 pounds and was quite inactive. After about a week he complained of dizziness and of

feeling ill, altho on duty regularly. He lost about 15 pounds in weight. The physician made daily examinations and was at a loss to explain his condition. He was not sure whether it was due to ozone or was merely a coincidence. But after a study of the weights of the children it was decided that the ozone had caused a rapid oxidation of this superfluous tissue and it had been poured into the lymphatic system faster than the kidneys could remove it, and the result was the illness stated. It is interesting to note that this principal has been in better health since that time and is anxious to have the ozone installed permanently. It is simpler than exercising for reducing weight.

No contagious disease occurred in this school. Both parents of one family died of influenza during this period, and neither of two children in school contracted the disease. Colds were noticeably less. This colored school was perfectly free from odors. The coal consumption was measured, and in comparison with days of equal outside temperature the coal used was almost exactly one-half. Agar plates were exposed in a room filled with pupils, and the average count of bacteria was 225, which was extremely low, indicating that the ozone had destroyed the active germs of the air.

Trial With Complete Recirculation But Without Air Washer

Further test was made, of another school



NEW DESIGN OF HEATING SYSTEM FOR SCHOOL BUILDING OF THE ST. LOUIS BOARD OF EDUCATION, SHOWING METHODS OF INCORPORATING OZONE APPARATUS



*Federal government truck used on road work near
Des Moines, Ia.*

Another

FEDERAL

Federal Trucks for County or City Use

The knowledge that the truck you buy for municipality, county or township work has the ability to do its work faithfully, 360 or more days each year for a long period of years is the knowledge that will prompt you to make "Another Federal" the next truck you buy.



*This is the sign of
the 10th year Fed-
eral—a sign signifi-
cant of ten years'
success in every
field of truck
transportation.*

Federals everywhere, on state, county or city jobs, and giving the same carefree, dependable service that has made them so popular in this field.

They are built in capacities of from one to five ton—a capacity and size for your every need.

"Traffic News" an interesting magazine on the subject of haulage sent monthly on request.

FEDERAL MOTOR TRUCK COMPANY
34 FEDERAL STREET DETROIT, MICH.

"Shorten the Miles to Market—Use Motor Trucks"

having complete recirculation without the air washer. In this school no teacher or pupil was aware of the experiment, and after ten days the principal sent a note to the teachers to report whether they had observed any change of air in the building, whether worse, or better, or no change. Three had observed no change; all the others reported that they had noticed improvement; some were enthusiastic. One had first observed a marked improvement in the work of the pupils and was unable to account for it. One said it was delightful. No complaint of poor ventilation had come to his office during this period. The principal volunteered the statement that he was sure it was a great improvement. The economy in coal was a little less than 50 per cent.

Results of One Year's Tests

To sum up the results of a year's tests with ozone in the schools, the following facts are indicated. Ozone does destroy all odors resulting from the respiration, bodies and clothing of the children. It produces a mild exhilaration resembling that of a sea breeze or the air on a morning after a thunderstorm. It removes smells from the building due to lodgment of dust in ducts and the like. It destroys toilet room odors. When used in proper concentration for ventilation, it has no odor itself. It reduces weight in persons corpulent from inactivity. It appears from limited data to be a preventive of influenza. It undoubtedly is of great value in the treatment of influenza and pneumonia, as demonstrated in the influenza hospital at St. Louis last year. To this should be added the evidence adduced by the medical authorities of France that ozone increases greatly the oxyhaemoglobin of the blood, thereby increasing the oxygen-carrying capacity of it. This in turn cures anemic persons. The introduction of ozone in ventilation would probably remove the necessity for open-air schools now common in most cities.

Having carried out these experiments to the satisfaction and enthusiastic approval of all concerned, and having discovered what seemed to have heretofore prevented the introduction of ozone in ventilation, it is deemed proper to give here some concrete details governing the installations in school buildings. In the St. Louis experiments it was early determined that in ventilation with ozone the maximum concentra-

tion should be too low to give an ozone odor.

Tests were made to determine the effect on teachers and pupils when ozone was used up to that maximum. No illness or discomfort was detected in normal persons. On the contrary, a mild exhilaration was experienced in every way similar to that of the refreshing sensation after a thunderstorm. As previously noted, the very corpulent persons lost weight, and in the case of an old man leading a very inactive life, ozone caused dizziness and headache for several days. The net results of this experience were of great benefit to all the persons. It reduced the weight to the extent of the inactive tissues. A few persons at first felt a roughness of the throat, a slight over-stimulus of the mucous membrane, which disappeared within two days. It has therefore been demonstrated that ozone used in a concentration up to the point of producing an ozone odor is safe for ventilation. This may be called one of the calibrating points in the scale. However, persons not accustomed to ozone air must be used for detecting the odor, as the sense of smell for ozone quickly declines when exposed to it.

Having ascertained that chemical means of determining the quantity of ozone for ventilation were impractical, the writer proceeded to develop a standard from the manufacturing standpoint, which may be used in determining in advance the proper concentration for any given volume of air movement or for a given number of occupants of a room. This standard was developed after ascertaining that with a given voltage and a given thickness of dielectric, the amount of ozone generated was proportional to the number of brush discharge points of the generator.

The most satisfactory apparatus uses 4,000 volts alternating current from a static transformer, all inclosed with the ozone generator unit, which uses a micanite plate dielectric, 0.040 inches thick, and aluminum points spaced approximately $\frac{1}{2}$ -inch apart. It was observed that 600 brush points made just enough ozone for 1,000 cubic feet of air from the blast fan.

This test was with rooms filled with 45 to 50 children much below the average in cleanliness. For rooms occupied by fewer persons the brush points or voltage should be reduced. If conditions are to remain constant, some points should remain constant, some points should be disconnected,



Packard Truck with tank body and special street-flushing equipment. Note how the Packard concentrates the load on the rear axle—with advantage of easier control and less wear from vibration.

Keeping the Traffic Arteries Open

IT is estimated that last February's storm cost the New York public alone over a million dollars a day—largely due to antiquated snow-hauling equipment.

One bad storm often wipes out all the apparent savings of years in buying trucks on a price basis.

The City Official who feels the responsibility of keeping the highways open is looking more and more at what a truck can *do*—rather than the price at which it can be assembled.

The following National Standard Truck Cost System facts on the performance of over 1700 Packard Trucks in 1919 have a *vital significance* for the truck user.

An average *saving in gasoline* of 10 per cent—due to greater efficiency in operation with the aid of the National Standard System.

The National Standard System

used in connection with Packard Trucks has shown it possible to reduce cost per ton-mile.

Truck owners who have used the System for a year or more, and have compared the Packard with other trucks, are *standardizing* on Packard.

* * *

The driver finds the Packard easier all around to handle.

Less vibration; because of the *smooth-running* Packard engine, the construction of the worm drive, and the placing of 85 to 95 per cent of the live load on the rear axle.

Easier handling on the hills, owing to Packard high tractive force on the road; and four-speed transmission graded up by regular steps.

With the thinking City Official, these transportation economies far outweigh "features" and "talking points."

"Ask the Man Who Owns One"

PACKARD MOTOR CAR COMPANY, *Detroit*

but with varying conditions a controller should be installed to regulate the voltage by taking taps out of the primary of the transformers.

Where the air is recirculated in whole or in part, the ozone must be cut down to the point where no ozone odor is noticeable. In fact, the revitalizing of the air of the average schoolroom when recirculating 90 per cent of the air will be effectively done with half the maximum stated above. The writer believes that the delay in the use of ozone in ventilation has been due to trials made with too high concentration and to the absence of any information on a means of control.

It is also true that until recently ozone was produced by static discharges thru the air, the open arc or spark producing nitrogen compounds which were objectionable for ventilation. Ozone should be used with the blast fan to get uniform distribution, and the ozone machine should not be started until the fan starts.

Where it is desired to use ozone to take the place of ventilation in rooms with direct radiation, a small apparatus with a fan self-contained should be used to distribute the ozone. It is fortunate that ozone is heavier than air and tends to get to the lower stratum of air, which is the impure stratum. Ozone does not destroy dry bacteria, but destroys most species of germs when moist, and if sufficient humidity is maintained in an unventilated room, the moisture of the mucous membrane will be sufficient to enable ozone to destroy most bacteria.

The results obtained in these experiments call for a recasting of all our ideas on heating and ventilation. In the attempt to improve the systems, much superfluous junk has crept into even standard specifications. With a reliable means of revitalizing the air, the sizes of boiler, fan and air washer are greatly reduced. As the air carries within itself the revitalizing element, a small variation in air flow will not affect the children. The expensive hot room and tempered-air chamber, together with the individual duct and mixing dampers, may be dispensed with.

The figures show a plan and a sectional view of the apparatus room of the last building designed by the St. Louis Board of Education. It will be noted that the plant is concentrated into compact quarters. The vented air goes to the attic without galvanized iron ducts, only the heated air being carried in iron ducts. The vented air passes up the concrete shaft about the air ducts. To avoid heat losses in the attic, an insulated trunk duct picks up the air from the shafts at the end of the wardrobes. This vented air is delivered thru the ceiling into the apparatus room as shown. This air may pass thru control dampers and the ozone apparatus directly into the fan with 10 per cent or any other amount of new-washed and humidified air, the proportion being at will, or dependent upon the house leakage.

ACKNOWLEDGMENT.—From a paper read at the annual meeting of the American Society of Heating and Ventilating Engineers, New York.

A Law to Punish the Transportation of Stolen Motor Vehicles

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that this act may be cited as the National Motor Vehicle Theft Act.

Sec. 2. That when used in this act:

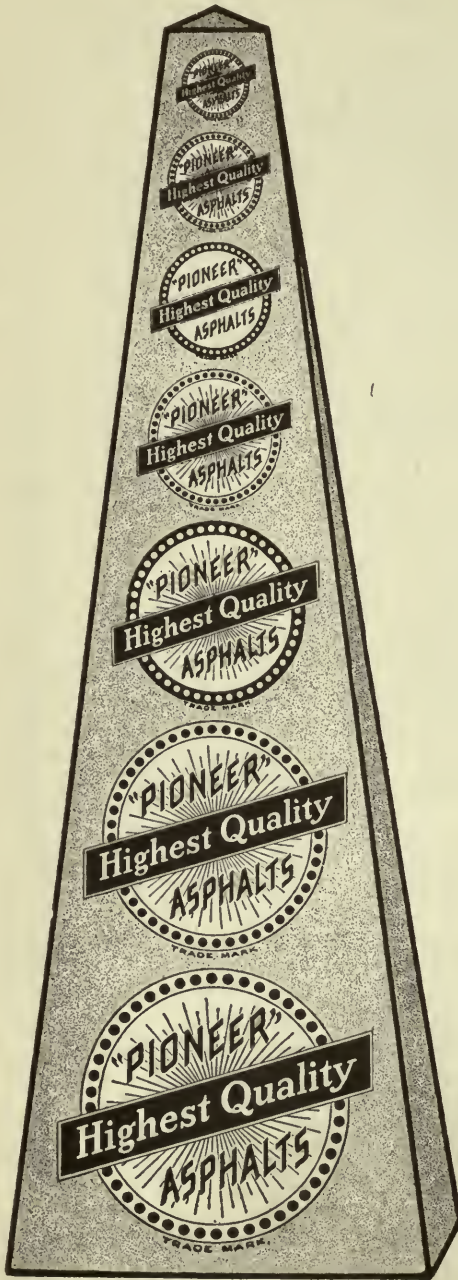
(a) The term "motor vehicle" shall include an automobile, automobile truck, automobile wagon, motorcycle, or any other self-propelled vehicle not designed for running on rails;

(b) The term "interstate or foreign commerce" as used in this act shall include transportation from one state, territory, or the District of Columbia, or to a foreign country, or from a foreign country to any state, territory, or the District of Columbia.

Sec. 3. That whoever shall transport or cause to be transported in interstate or foreign commerce a motor vehicle, knowing the same to have been stolen, shall be punished by a fine of not more than \$5,000, or by imprisonment of not more than five years, or both.

Sec. 4. That whoever shall receive, conceal, store, barter, sell, or dispose of any motor vehicle, moving as, or which is a part of, or which constitutes interstate or foreign commerce, knowing the same to have been stolen, shall be punished by a fine of not more than \$5,000, or by imprisonment of not more than five years, or both.

Sec. 5. That any person violating this act may be punished in any district, in or thru which such motor vehicle has been transported or removed by such offender.



A MONUMENT TO QUALITY

"PIONEER"

EXPANSION JOINT COMPOUND

Equipped with the newest and most up-to-date machinery for producing paving joint compound we are able to give a better product and better service than ever before.

You simply cannot make a mistake in using PIONEER Expansion Joints in your work. They are made of pure asphalt and are 100% efficient.

Write for samples and prices.

HERE'S A NEW ONE

"PIONEER"

RUBEROAD CEMENT

A new product that will interest every Engineer and Contractor. Just the thing for repairing cracks in concrete roads, and for making cold patches in all kinds of asphalt construction.

It Is New—It Is Different
It Is Efficient

The Pioneer Asphalt Co.
Lawrenceville Ill.

Municipal and Civic Publications

The Turnpikes of New England—An Evolution of the Same Through England, Virginia and Maryland.

FREDERIC J. WOOD, Member, Am. Soc. C. E., Boston Society of Civil Engineers, New England Historic Genealogical Society. Marshall Jones Company, Boston. 1919. vii + 441 pp. Diagrams and illustrations.

The author of this interesting and valuable volume discovered in 1908, when preparing a report on certain transportation facilities, that public and technical libraries contained little or no material regarding the old turnpikes of the northeastern section of the United States. These turnpikes were the first public utilities in this country, being antedated only by a few water companies. This book is the outcome of a genuine interest in early road-building transportation facilities and a commendable desire to provide a work which would contain a complete record of the old turnpike companies and their problems. The stories of the various companies are interestingly told, and the problems of the early bridge builders are given in detail. While primarily a historical volume, it will prove profitable reading for engineers. Those who enjoy a trip into the olden days will delight in the stories of the New England roads, which have become so well known in late years, particularly thru the advent of the automobile. The author gives the reader a more thoro appreciation of the value of good roads to the country, which is summarized in the quotation from Ralph Waldo Emerson which graces the page preceding the frontispiece:

"When the Indian trail gets widened, graded and bridged to a good road, there is a benefactor, there is a missionary, a pacificator, a wealth bringer, a maker of markets, a vent for industry."

American Civil Engineers Hand Book.

MANSFIELD MERRIMAN, Editor in Chief. John Wiley & Sons, Inc., New York, 1920. Fourth Edition. 1,955 pp. Diagrams and tables.

Owing to the increasing size of the well-known Merri-man's Pocket Book, the fourth edition, just issued, is now more properly called a hand book. With the revisions and the addition of 375 pages, this book maintains its preeminence as a reference volume for all engaged in civil engineering practice.

Americanization.

CAROL ARONOVICI, Ph. D. Keller Publishing Company, St. Paul, Minn. 1919. 48 pp.

The viewpoint from which this booklet is written is that of an immigrant from the educated classes of Roumania, who began his career in the United States as a laborer and finished his university education here, and has spent twenty years in self-Americanization and more than half as many in studying the conditions which affect our immigrant population. He analyses the present methods of Americanizing the foreigner, and also their success in developing loyalty to American ideals without losing the high qualities with which the alien may be able to enrich our democracy.

Insect Life on Sewage Filters.

W. H. PARKINSON, M. D., P. H., and H. D. Bell, A. I. G. The Sanitary Publishing Company, Ltd., 8, Breams Buildings, London, E. C. 1919. VIII + 64 pp. Diagrams.

A detailed technical presentation of the results of studies by the author of various forms of insect life on the sewage filters of Manchester at Davyhulme and Stratford-on-Avon. The treatise covers intensive studies of the life cycle of various sewage organisms and their effects on the action of sewage filters.

Proceedings of the National Conference of Social Work.

Apply to WILLIAM T. CROSS, Secretary of the Conference, 315 Plymouth Court, Chicago, Ill. 1920. x + 813 pp.

A Handbook of Petroleum, Asphalt and Natural Gas.

ROY CROSS, Kansas City Testing Laboratory, Kansas City, Mo. 1919. 496 pp. Charts, tables and illustrations.

In the preface to this valuable volume, the author states that the book has been published for the benefit of the petroleum producer, seller, refiner and technologist, but the material covers statistics on the production, properties, handling, refining and methods of valuation of petroleum and related products which will be found of great value to the engineer and the purchasing agent who are handling these products for government units.

The opening chapters give in concise manner the economics, geology and production and refining statistics of oil and gas wells in the United States. The remaining chapters deal with the storage, measurement, gauging and transportation of these products and their derivatives. The chapter on the refining of oil for road-building and paving purposes is of particular interest to the highway engineer, as it covers the composition of asphaltic oils, analyses of typical pavements, specifications and tables for the use of asphalt oils and the use of these oils as surfacings for concrete pavements and as joint fillers for different types of brick pavements.

The Motor Truck as an Aid to Business Profits.

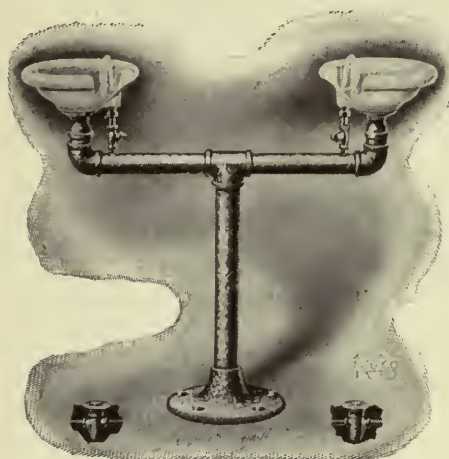
S. V. NORTON. A. Shaw Company, Chicago, Ill. xxi + 509 pp. Illustrated.

The title of this book might lead one to believe that it was intended solely for the man contemplating a motor express or for the use of business houses in developing their delivery systems. A careful study, however, shows that it contains material of great benefit to municipalities, contractors, engineers, chambers of commerce studying the transportation problem, and all others interested in the development of transportation facilities. The opening chapter discusses at length the field of the motor truck in modern business and how it can be used to overcome many transportation difficulties. The question often arises in one's mind as to the proper time to change from horse-drawn vehicles to motorized equipment; this is discussed in another chapter, which will be of interest to those who are contemplating such changes. The comparative costs of horse and truck deliveries and the methods used to determine operating costs for motor trucks are outlined, with a careful delineation of the Truck Owners' Conference System, generally known as "National Standard Truck Cost System." All motor trucks are not applicable in one particular service, and considerable help is given to the prospective truck owner or user in the discussion of this problem. One might say that the motor truck itself has already reached the peak of its usefulness, but the ingenious automobile engineer has added the trailer, which has doubled and even trebled the value of the motor truck in hauling and delivery systems. A careful study of the use of trailers should be made by municipal officials in charge of garbage and ash collection systems, by contractors in their hauling of materials, and by business men who have difficult hauling and delivery problems. Finally, the book covers the personal element in motor truck operation, i. e., ways and means for helping the driver to care for his truck, proper lubrication and care of tires, as well as many other hints which will be found invaluable to the reader.

Principles and Methods of Industrial Education for Use in Teacher Training Classes.

WILLIAM H. DOOLEY, in charge of Navy Yard Continuation School for the New York Board of Education. With an Introduction by Charles A. Prosser, Director of the Federal Board for Vocational Education. Houghton, Mifflin Company, Boston. 1919. xi + 257 pp. Illustrated.

Are You Familiar with the Danger of the Vertical Stream Fountain?



EXHAUSTIVE and scientific tests conducted by eminent authorities prove that vertical stream drinking fountains are a menace to the public health. It has been shown that the water which has touched the lips can fall back into the jet and seriously contaminate the source of supply.

Rundle-Spence "Vertico-Slant" Overcomes All Objections

The "VERTICO-SLANT" is the nearest to the 100% sanitary fountain that can be produced. It is the very latest feature in modern drinking equipment. The stream bubbles out at a practical and convenient angle. Lips cannot touch jet — water cannot fall back. Drinking fountain experts proclaim this fountain as sanitary in every respect — overcoming every objection to the old bubbler type. Ideal for schools, public buildings, parks and streets.

Send address for illustrated descriptive matter treating on the subject of sanitary drinking fountains.

Rundle-Spence Mfg. Co.
Milwaukee Wisconsin

The two-head fountain shown at the top of the page not only has a vertical slant stream for each bowl, but has a foot operating device as well, making it possible for anyone to take a drink without using his hands, which is an essential element in minimizing contamination in public places.



Motor Truck Transport.

Two pamphlets issued by the Motor Truck Committee of the National Automobile Chamber of Commerce, Inc., 7 East 42d Street, New York, N. Y., giving, respectively, the following addresses delivered at the Highway Transport Conference in New York, 1920: "The Mid-West Farm Market for Motor Trucks," by Arthur Capper, U. S. Senator from Kansas; and "Motor Truck and Railroad Freightling" (comparisons as to cost, range and service of moving less than car-load shipments via freight to short-haul points, and the movement of the same class of freight via motor trucks), by W. J. L. Banham, General Traffic Manager, Otis Elevator Company. (Apply to the National Automobile Chamber of Commerce.)

Surface Water-Supply of the United States.

Part XI of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1916. Entitled, "Pacific Slope Basins in California." Data collected by the United States Geological Survey. This volume prepared by Nathan C. Grover, Chief Hydraulic Engineer, and H. D. McGlashan and F. F. Henshaw, District Engineers, in cooperation with the State of California. Water-Supply Paper 441 of the United States Geological Survey. (Apply to the Government Printing Office, Washington, D. C.)

Official Directory of the City of New York.

Third Edition (1920) of this handy little pocket reference book, compiled by William Viertel, Editor of the *City Record*, under the direction of Peter J. Brady, Supervisor of the *City Record*. 164 pp. It contains a brief history of New York City, information as to the personnel of the city, county, state and federal offices, and the city institutions and their functions. Furnished both in paper and in leather covers. (Apply to the Supervisor of the *City Record*.)

Police Departments in Kansas Cities.

A report on Police Departments in Seventeen Kansas Cities of the First and Second Class and in Twenty-Five Out-of-State Cities. A summary of the answers received to a questionnaire on the subject of police departments, including the number of officers, salaries paid, whether or not uniforms are furnished by the city, and policemen's benefit funds. Compiled and mimeographed by the Municipal Reference Bureau of the University Extension Division of the University of Kansas, Lawrence, Kans., March 1, 1920. (Apply to the Bureau.)

"Save the Youngest."

Seven charts on maternal and infant mortality, with explanatory comment. Published by the Children's Bureau, U. S. Department of Labor. Children's Year Follow-up Series No. 2; Bureau Publication No. 61. (Address the Bureau, Washington, D. C.)

Municipal Reports

Chicago, Ill.—Annual Report of the Department of Public Works for the year ending December 31, 1919. (Apply to John A. Kleins, Chief Clerk of the Department.)

Chicago, Ill.—Department of Health. Report for 1911-1918. (Apply to John Dill Robertson, M. D., Commissioner of Health.)

Duluth, Minn.—Water and Light Department. Twenty-first Annual Report, for the year ending December 31, 1919. (Apply to P. G. Phillips, Commissioner of Public Utilities.)

Johnstown, N. Y.—Forty-first Annual Report of the Board of Water Commissioners, filed with the City Clerk, January 10, 1919. (Apply to Grover E. Yerdon, City Clerk.)

Kansas City, Mo.—Report of the Board of Fire and Water Commissioners for the year ending April 21, 1919. (Apply to Alex Henderson, Chief Fire Department.)

Kearney, N. J.—Tenth Annual Report of the Shade Tree Commission. 1919. (Apply to H. H. Sincok, Secretary, The Shade Tree Commission.)

Keweenaw, Ill.—Revised Ordinance of the City. (Commission form of government.) Revised and edited by Thomas J. Welch, City Attorney, 1909-1919. Published by authority of the City Council, December 1, 1919. (Apply to W. A. Charlet, City Clerk.)

Publications of the United States Public Health Service.

An invaluable list of the printed matter distributed by the U. S. Public Health Service, with information about how to secure the various periodical and special publications. Dated April, 1919. 94 pp. Miscellaneous Publication No. 12. (Apply to the Government Printing Office, Washington, D. C.)

Michigan Health Almanac, 1920.

The January, 1920, issue of "Public Health," published by The Michigan Department of Health, is arranged in almanac style and contains considerable miscellaneous health information and numerous household hints, with enlivening paragraphs of various kinds. 55 pp. (Write to Richard M. Olin, M. D., Commissioner, Michigan Department of Health, Lansing, Mich.)

Town Planning in Bombay.

A quarto pamphlet of 64 pages, with diagrams, setting forth the results of the Bombay Town Planning Act of 1915, this being a paper read at a meeting of the Town Planning Institute, in London, on December 5, 1919, with the discussion thereon. Published by authority of the Town Planning Institute, 4, Arundel Street, London, W. C., England.

Rural Community Buildings in the United States.

This is the title of Bulletin No. 825 of the U. S. Department of Agriculture, a contribution from the Bureau of Markets, published January 30, 1920. It was prepared by W. C. Nason, Assistant in Rural Organization, and C. W. Thompson, Specialist in Rural Organization, and contains 36 pages, with illustrations. It shows the growing interest in community buildings and classifies them according to the source of funds for their establishment. Their general character, maintenance, operation and management, and the uses to which they are put, are presented in detail, and specific examples are described and illustrated. (Apply to the United States Department of Agriculture, Washington, D. C.)

Housing Betterment.

The February, 1920, issue of this quarterly publication of The National Housing Association contains 86 pages of exceedingly interesting material, a large portion of it referring to conditions in Europe. The opening article, on "England's Newest Housing and Town Planning Act," is by Frank Backus Williams. The material is all in brief, clear form, full of direct information. There are a number of "News Notes" from cities in the United States, and a list of recent books and reports on housing and town planning, prepared by F. W. Jenkins, Librarian of the Russell Sage Foundation. (Write to the National Housing Association, 105 East 22d Street, New York, N. Y.)

Los Angeles, Calif.—Annual Message of Meredith P. Snyder, Mayor, January 2, 1920. (Apply to the Mayor.)

Oshkosh, Wis.—"Municipal Recreation and Physical Education." A report of the Department of Recreation and Physical Education of the Board of Education, at the end of the third year, September 1, 1919. (Apply to A. S. Hotchkiss, Director of the Department.)

Palo Alto, Calif.—Annual Report of the Health Department for the year ending December 31, 1919. (Apply to Louis Olsen, Health Officer.)

St. Paul, Minn.—Bureau of Civil Service. Sixth Annual Report. 1919. (Apply to Jesse Foot, Civil Service Commissioner.)

South Norwalk, Conn.—Sixth Annual Report of the Second Taxing District of the City of Norwalk, formerly the City of South Norwalk. August 31, 1919. (Apply to Arthur H. Sterling, District Clerk.)

Winnetka, Ill.—Annual Report of the Village for the year ending March 31, 1919. (Apply to John S. Miller, President of the Village.)

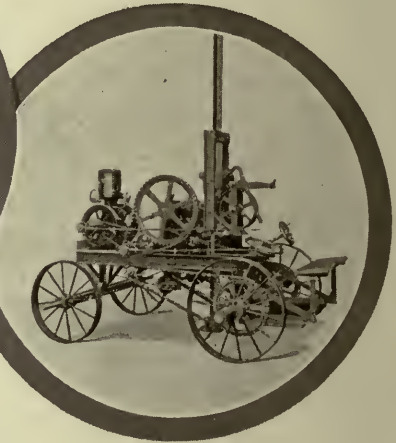
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Methods, Materials and Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

The Artesian Well-Pumping Units at Savannah, Ga.

The city of Savannah is now effecting a large saving every day on account of the installation of an electric-motor-driven pump on an artesian well furnishing 4,000,000 gallons of water daily to the city. The plant from which the city formerly got its water-supply cost \$65 a day to pump a million gallons of water, while the new equipment pumps at the rate of \$10 a million gallons, or a saving of \$55 for every million gallons pumped.

If the city desires to install electric pumps thruout—and the indications are that it will do so shortly—a saving of \$57,500 a year will be effected in fuel and labor costs.

The artesian well is 519 feet deep and was dug by the use of dynamite. A 24-inch casing

was sunk to a depth of 110 feet, and from there to the bottom a 16-inch casing is used. The fact that this casing runs the full length of the well assures the consumer a supply of pure water. The pump, which is of the Layne & Bowler centrifugal type, is installed 100 feet below the surface. It is driven by a 200-h.p. 2-phase, 60-cycle, 2200-volt, 1175-r.p.m. vertical induction motor which was built by the Westinghouse Electric & Manufacturing Company, and shipped to Savannah from the East Pittsburgh Works by express because of its urgent need by the city. Current for the operation of the motor is supplied to the city by the Savannah Electric Company.

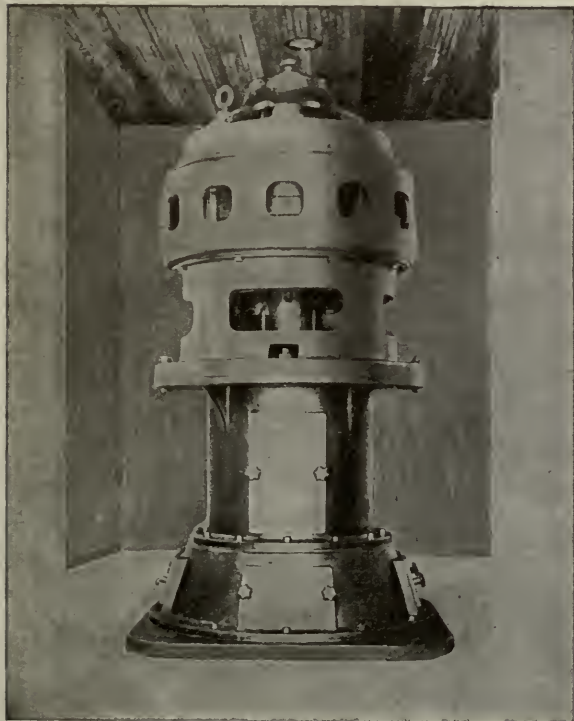
Tests made on the water pumped from the well have proved its superiority over the water formerly pumped from the River Station, and it is apparently much softer than any artesian water previously used in the city. The water contains some sulphur, lathers well, and is unusually well adapted for all domestic as well as commercial uses.

A further evidence of the saving to be gained by the operation of the new outfit is shown by the following figures submitted by the city officials: The original system, with a capacity of 1,000,000 gallons, was installed at an original cost of \$750,000, and the operating cost amounted to \$30 per million gallons; to install the new system cost \$10 a million gallons, so that not only is there a large reduction in first cost, but the operating costs are reduced two-thirds.

The total number of wells completed, or for which contracts have been let, is five, to be driven by motors of the following capacities: one 100-h.p.; two 200-h.p., and one 300-h.p. All the motors are installed above ground except one, which is located under the street in a pit entirely enclosed and furnished with forced draft ventilation.

Asphalt Association Moves Office

Permanent headquarters for the Asphalt Association have been established at 25 West 43d Street, New York City.



MOTOR-DRIVEN PUMP FOR ONE OF THE 4,000,000-GALLON ARTESIAN WELLS OF THE SAVANNAH, GA., WATER-SUPPLY



A Modern Lighting System

does *not* require separate Lamp Standards as this street scene clearly shows.

Missoula, Montana, is one progressive western city utilizing "ELRECO" Combination Railway and Lighting Poles, which makes separate Lamp Standards unnecessary.

The "ELRECO" Steel Poles support ornamental lighting brackets with modern General Electric Lighting units; also, the span and service wires of the Railway and Lighting Company; keep the streets free and unobstructed from extra Lamp Standards, wooden poles, and a multiplicity of wires, etc.

The usual practice of financing such an installation is to divide the cost between the local Street Railway and Lighting Company, Merchants and the City, making the cost of "WHITE WAY" very reasonable.

What other progressive cities have accomplished is well illustrated in our handsome Catalog "F", sent on request to those interested.

Electric Railway Equipment Company
CINCINNATI, OHIO.

New York Office — 30 Church Street

Proper Sanitary Toilet Facilities for Public Parks and Rest Rooms

The problem of proper sanitation of park facilities has always been one of vital importance, but because many parks are in isolated sections or in districts that are being built up around natural beauty spots beyond the sewer limits, the installation of proper sanitary facilities has been difficult. This, of course, has never been a problem in parks that are centrally located in large cities with sewerage and water-supplies, but in parks on the outskirts and in the suburban districts of large cities, or around lakes, or in small towns that are not served by sewers, the old outside pit type of privy has always been a source of annoyance to health officials and park commissioners. There are to-day scattered thruout our country thousands of parks that are beautiful so far as artificial lakes, ponds, flowers and shrubbery are concerned, but in which can be found, hidden back of clumps of bushes, breeders of disease called rest rooms, or toilet rooms—a repulsive condition, but one which in years gone by could not be controlled systematically and efficiently.

Scientific research and sound mechanical engineering have now found a solution of this world-wide problem, and to-day many manufacturers are offering to the trade a perfected system of sewage disposal called the chemical toilet that is efficient, guaranteed odorless and sanitary, and is approved by boards of health and boards of education and leading sanitarians everywhere.

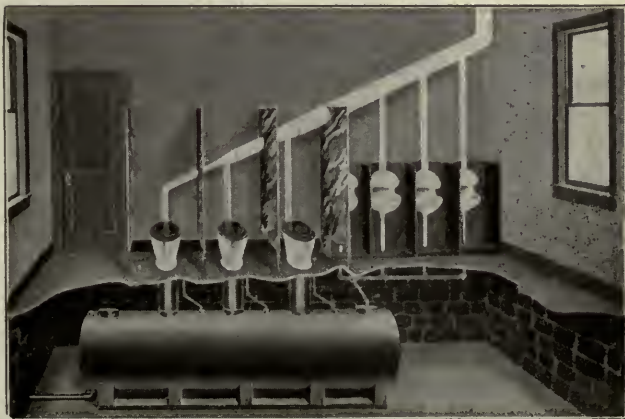
The accompanying illustration shows a popular type of multiple installation of chemical toilets for public buildings where more than one bowl is required, manufactured by the Dail Steel Products Company, 199 Main street, Lansing, Mich. It is figured that, on the average, one bowl will take care of from 15 to 20 persons daily for six or seven months.

The chemical toilet is recognized as the logical type of sewage disposal for unserved districts. Colonel C. W. Stiles, U. S. Public Health Service, in a paper read at New Orleans before sanitarians, rated the chemical toilet 75 to 100 per cent efficient for disposal for districts not served by sewers. An efficient chemical toilet must of necessity be constructed along good engineering principles. The principal necessities of an efficient toilet are the following: There should be a well-made tank of non-corrosive metal; each tank should have a 125-gallon capacity per bowl opening for single units, and 100-gallon capacity per bowl opening for multiple units. The tank should be fitted with an efficient system of agitation, so that the excrement is thoroughly mixed with the chemical charge that is put into the

tank, to promote proper chemical action and the breaking up of the excrement. The tank should also be fitted with a large drain valve with an opening of not less than 3 inches, which is easily accessible, and, when the tank becomes two-thirds full, allows it to be drained off into what is known as a cess-pool or leaching pool, or some other sort of seepage system, many kinds of which are used successfully.

The bowl should be made of the very best vitreous china, and should be equipped with a good, finely finished seat, and the bowl should be so designed that it will be properly ventilated. Without proper agitation and ventilation no chemical toilet can be a success. The Dail Steel Products Company makes a specialty of free engineering service, and where multiple installations are to be used, the company makes a rough sketch of the building and constructs the outfit and the ventilating pipe to meet the particular requirements of that building, so that when the outfit arrives the average contractor can put it in according to the plans. Then the company feels safe in guaranteeing the successful operation of the equipment.

It is of vital importance to all the citizens of the United States to promote to the utmost better sanitary conditions everywhere. The United States Public Health Service is making a fight to improve these conditions. In the many surveys made by the Service it has been found that only 2 per cent of privies in unserved districts are sanitary. This is an appalling condition. It is therefore highly essential that much attention be given to the proper sanitation of rest rooms and toilet rooms in public parks. The health of the people to whom the parks are the only means of recreation during the summer months is of the greatest importance. To eliminate the possibility of spreading disease bred by improper toilet facilities is an essential part of the park service. It is gratifying that by the installation of the modern chemical equipment here described this danger to the public welfare is summarily dealt with.



A MULTIPLE CHEMICAL TOILET

To meet the demand for homes, construction was carried out on schedule despite the severe conditions of a New England winter



An extensive housing development for textile mill employees at Nashua, N. H.
DESIGNED AND CONSTRUCTED BY MANN & MACNEILLE

A practical service for Chambers of Commerce, Manufacturers and Real Estate developers faced with one of today's more difficult problems

PROVIDING HOMES FOR INDUSTRIAL EMPLOYEES

Finance-Location-House design-Construction-Sales policy

¶Through our recent investigation of the activities of Chambers of Commerce in finding means to relieve the shortage of homes for industrial employees, we note that many officials and members of Housing Committees are facing this serious problem with its ramifications of finance, building costs and general policy. Industrial expansion today almost invariably calls for additional homes.

¶To meet this situation, not only civic housing corporations but manufacturers and real estate developers are giving serious consideration to the construction of groups of dwellings. The planning of homes for workmen; the laying out of these new residential sections, and the efficient construction of groups of houses, constitutes a new science in which the service of specialists may prove invaluable.

¶Several years ago, foreseeing the need of this service, the Industrial Housing Department of Mann & MacNeille was organized. Analytical study of this subject, combined with extensive field experience, including entire charge of housing for the Army Ordnance Department for a long period during the war, has resulted in the development of the largest and most efficient organization of this type in America. Under one contract we are prepared to advise on financing; design, construction and determine the sales policy for any type of housing operation. We shall be glad to tell you how we approach a problem of this nature.

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HEATING TAR IN A NUMBER OF KETTLES ON A NEW YORK STATE HIGHWAY JOB WHERE SMALL UNITS PROVED PARTICULARLY ECONOMICAL

Wood-Burning Tar-Heating Kettles

One of the most popular tar-heating kettles manufactured by the Tarrant Manufacturing Company, 12 Maple avenue, Saratoga Springs, N. Y., for use on small jobs, or where a number of kettles can be used to advantage on one job, is "Tarco" Kettle No. 4. This kettle has a length of 6 feet 9 inches, a width of 32 inches, and a height of 36 inches. The inside of the fire box is lined with 20-gauge corrugated iron to a height of 18 inches, which prevents the warping of the outside sheet. The outer kettle is reinforced on all sides with appropriate size angle irons. The feed door at the rear end is 18 inches long and 12 inches high. In order to insure a large smoke space and prevent the cutting down of draft by the accumulation of ashes at the front end of the kettle, the forward end of the outer tank is rounded. The smokestack which surmounts this is oval, 4 feet high, covered with a cowl top. The draw-off is fastened to the inner body by means of a heavy pipe flange with 1½-inch pipe and iron lever-handle stop cock. This draw-off can be placed at the back, or at the side of the kettle. This kettle, which weighs 1,200 pounds, is particularly recommended by the manufacturers where heavy work and service are required.

Highway Engineering at N. Y. U.

H. Eltingé Breed, M. Am. Soc. C. E., Consulting Engineer, 507 Fifth avenue, New York City, has been placed in charge of the courses

in Highway Engineering in the School of Applied Science of New York University.

Mr. Breed served several years on road and canal work for the state of New York; was Assistant Chief Engineer of the Coleman du Pont Road in Delaware, and has studied roads and road building in Europe. Since 1915 he has been First Deputy Commissioner of the New York State Highway Commission, in which capacity he redesigned the Storm King Highway. He has lectured at Cornell and Michigan Universities, as well as at New York University.

New District Engineer for Eastern Paving Brick Manufacturers' Association

Announcement has recently been made by William B. Perkins, Chief Engineer, Eastern Paving Brick Manufacturers' Association, 1019 Lincoln Building, Philadelphia, Pa., that Captain P. C. Painter, late of the Engineering Corps of the United States Army, and former Senior Highway Engineer of the United States Bureau of Public Roads, has been appointed District Engineer of the Eastern District of the Eastern Paving Brick Manufacturers' Association, with headquarters at Philadelphia. Mr. Painter has had considerable experience, having been connected with the Paving Commission of the city of Baltimore for a number of years, and while in the army being in charge of road construction and maintenance in France. This office is glad to cooperate at any time with engineers who have paving problems.

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you can save in labor, time and material to pay for this

BURCH STONE SPREADER

and on every contract thereafter it will add greatly to your profits.

Handles any size stone for road building. Eliminates guesswork and re-hauling by accurate spreading at any depth desired.

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The Burch Plow Works Co., Dept. J Crestline, Ohio



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PATENT ANTI-FREEZING

BUBBLE FONT

Is the only drinking fountain made that was designed and is built solely for outdoor use. It does not have to be turned off at the approach of cold weather.

THE ONLY FOUNTAIN MADE THAT IS STRONG ENOUGH TO WITHSTAND PUBLIC ABUSE.

Perfectly adapted for use on the Public Streets, in Parks, Playgrounds, School Yards, and all semi-exposed or uncertainly heated enclosures.

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The MURDOCK MFG. & SUPPLY CO.
(THE ORIGINAL HYDRANT HOUSE)

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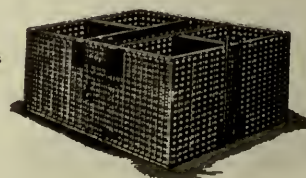
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No. 532 of Iron and Wire Fencing.
No. 534 of Builders' Iron Work.
No. A39 of Fire Escapes.
No. 429 of Wire Signs.
No. 5300 General.

In addition to these Catalogs and Portfolios, we have on file thousands of special designs. A selection of these together with a drawing to fit your particular needs will be sent you promptly upon request.

Centrifugal Pumps Saved the Day in Portland

In the City Park Station of the Portland, Ore., water-works are two 5-inch, 3-stage, horizontal split case centrifugal pumps, manufactured by the Fairbanks, Morse & Company, Chicago, Ill., direct-connected to 100-horsepower slip ring induction motors, with the necessary switchboard equipment for operation. The pumps have a capacity of 700 gallons per minute against a head of 300 feet when operating independently, and a combined capacity of 700 gallons per minute when working in series against a total head of 600 feet. The specifications called for an efficiency of 61 per cent when working independently against a 300-foot head, and acceptance tests show an efficiency of 64 per cent.

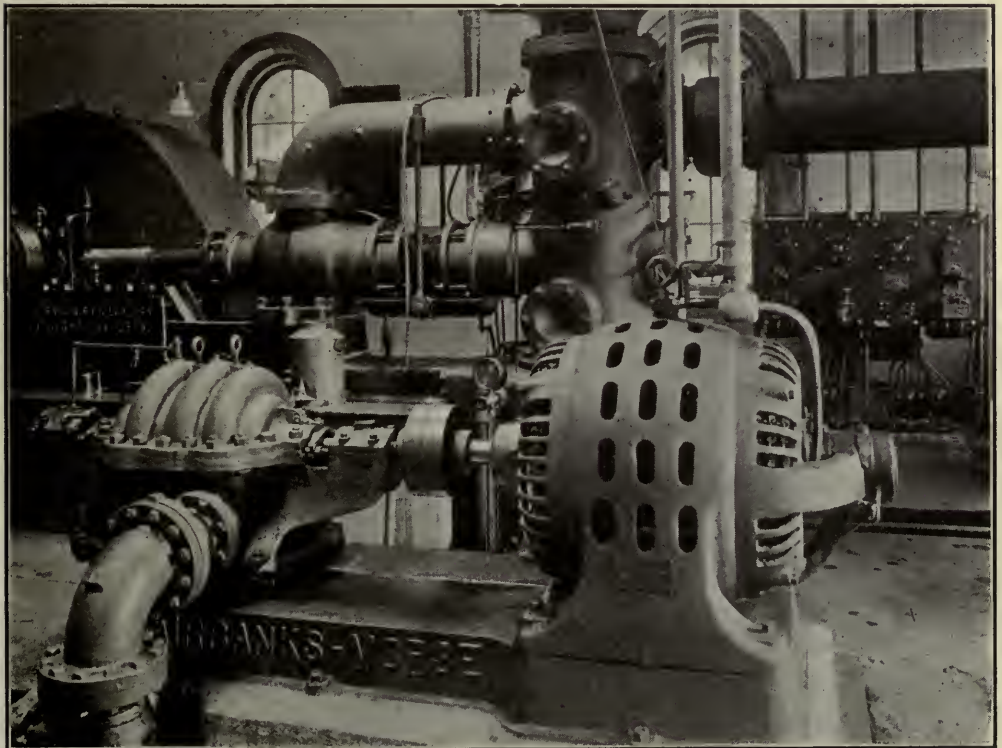
One 75-horse-power induction motor, direct-connected to a 3-inch, 5-stage centrifugal pump, was installed in Fulton Park, with the necessary switchboard equipment. This unit has a capacity of 350 gallons per minute against a head of 430 feet, and shows an efficiency of 35 per cent when tested. Another unit at Council Park consists of a 3-inch, 3-stage centrifugal pump direct-connected to a 40-horsepower induction motor. The pump has a capacity of 150 gallons per minute against a total head of 235 feet, with an efficiency of 55 per cent.

Kienle with Mathieson

John A. Kienle, formerly Sales Manager of the Electro Bleaching Gas Company, has been appointed General Manager of Sales of The Mathieson Alkali Works, Inc. This change was brought about by the severing of relations between The Mathieson Alkali Works, Inc., and its former sales agents, Arnold, Hoffman & Co., Inc. It is the intention of The Mathieson Alkali Works, Inc., to sell all of its products (caustic soda, soda ash, Virginia soda, bicarbonate of soda, bleaching powder, liquid chlorine, chlorine solvents, etc.) direct to the consumer instead of thru sales agents. Mr. Kienle has been placed in charge of the development of a complete sales organization. E. E. Routh, formerly Manager of Bicarbonate Sales, has been appointed as assistant to Mr. Kienle.

Reagan Made Eastern Sales Manager of Neptune

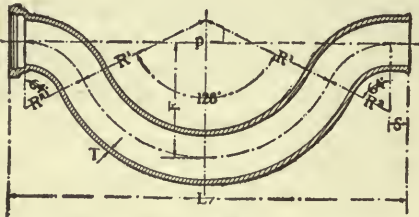
John F. Reagan, who for about ten years has been attached to the sales force of the Neptune Meter Company, 50 East 42d street, New York City, has been appointed Eastern Sales Manager of that company to fill the position made vacant thru the death of Daniel B. McCarthy. Prior to his association with this company, he was for more than ten years with the Consolidated Water Company, Utica, N. Y.



ONE OF THE TWO 5-INCH, 3-STAGE, SPLIT-CASE CENTRIFUGAL PUMPS AT THE CITY PARK STATION OF THE PORTLAND, ORE., WATER-SUPPLY SYSTEM

CLOW

Specials for Cast-Iron Pipe



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Deep Half-Circle Pipes

Where some pipe is already installed and you come in to carry on the work, you will find that Clow specials solve many problems.

Half-circle pipes are useful in going over or under pipe installed, or around manholes and other obstructions.

Many others—cutting-in tees and crosses, split sleeves and tees and a number of special devices—are described in “Pipe Economy”—*yours on request.*

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REMOVING A DECAYED SPOT FROM AN OTHERWISE HEALTHY TREE

Surgery for Trees

The services of tree surgeons are increasingly appreciated thruout the country. Park superintendents and others having to do with the welfare of the shade trees thruout our cities are constantly becoming more careful to repair injuries and remove destructive diseases from trees.

The extent of internal decay in a tree is not readily apparent to the untrained eye. An innocent-looking hole in the stub of a tree may upon examination give evidence of an unhealthy condition, as indicated in the accompanying illustration. The decay shown had been going on for four years. Already much of the interior had been consumed, and in another few years only the merest shell would have remained, leaving the trunk so weak that the tree would have been an easy victim for any severe storm, were it not for the sort of tree surgery work developed by the corps of experts employed by the Davey Tree Expert Company, Inc., Kent, Ohio.

Mack Has New Cincinnati Branch

The International Motor Company of New York, manufacturers of Mack trucks, announces the opening of a branch at 1425-28 Central Avenue, Cincinnati, Ohio, under the name of the Mack-International Motor Truck Corporation. G. K. Ross will be in charge.

Westinghouse Acquires Interest in George Cutter Co.

The George Cutter Company, 413 Notre Dame street, South Bend, Ind., announces the acquisition by the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., of a financial interest in their company. The management and the commercial policies will remain unchanged, but advantage will be taken of the Westinghouse engineering and other facilities to expand the Cutter Company's activities and develop its lines to enable it to more effectively serve its customers and the industry. The Westinghouse Company will operate as sole distributors for the Cutter Company's products.

The National Steel Fabric Company Purchases Highway Materials Department

The Highway Materials Department of the H. H. Robertson Company has been purchased by the National Steel Fabric Company, First National Bank Building, Pittsburgh, Pa. Announcement is made that the balance of unfilled fabric orders will be shipped by the National Steel Fabric Company. Correspondence relating to past contracts or new business should be addressed to the National Steel Fabric Company, at the address above. E. L. Benedict, former manager of the Highway Materials Department of the H. H. Robertson Company, is General Sales Manager of the National Steel Fabric Company.



A 7½-TON, 1800-GALLON MACK FLUSHER RECENTLY PURCHASED BY THE CITY OF NEW ORLEANS, LA.

Puritan **CANTONMENT** *DRINKING FOUNTAINS*

Designed for and adopted by the Government
for use in cantonments and Naval Training Sta-
tions during the war—now used by the largest
industries and schools.

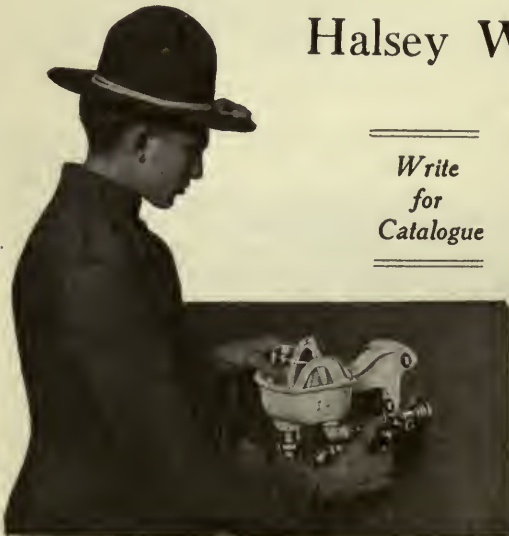


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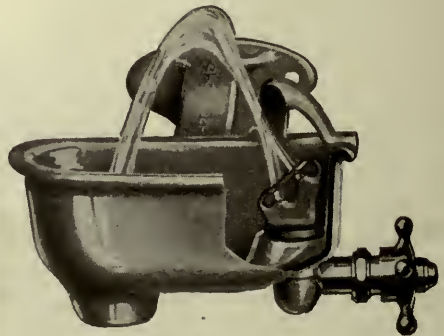
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Formed in Stream

VOLUME XXII

NUMBER 5

The American City

NEW YORK

MAY, 1920

The Alarming Crisis in American Education and How Some Cities Are Meeting It

By M. G. Neale

Associate in Education, Teachers College, Columbia University

WANTED, by public school officials in the United States, \$200,000,000 with which to increase teachers' salaries for the school year 1920-21, and \$2,500,000,000 with which to provide the sort of school buildings which the boys and girls of this country need to-day.

The Teacher Crisis

The conditions back of these two wants constitute what is frequently spoken of as the crisis of emergency in American education. There is certainly something in the nature of a crisis in the teacher situation, because it is obvious that good schools are impossible without good teachers, and good teachers are simply not to be had at the wages school boards are now able to pay. The United States is now actually 35,000* short of the number of teachers required to fill present teaching positions. This 35,000 shortage exists after about 65,000† make-shift teachers have been employed.

There is another side of the teacher crisis which is scarcely less striking than the present actual shortage of teachers and the number of incompetents now employed.

Young men and women have stopped going to normal schools and teachers' colleges to prepare themselves for teaching. Chart No. 1 shows that there will be, in round numbers, 50 per cent fewer graduates from normal schools and teachers' colleges in the United States in 1920 than there were in 1917.

This is a condition whose bad results will be cumulative from year to year, and means that unless something is done at once to make teaching more attractive as a career the boys and girls of the United States

DECREASE IN GRADUATES OF NORMAL SCHOOLS

YEAR	GRADUATES	PER CENT OF 1917 GRADUATES
1917	14,921	100
1918	13,356	89.6
1919	9,514	63.8
1920	7,119	47.8

CHART 1, SHOWING A DECREASE OF TEACHERS AT THE SOURCE

must at no very distant date be taught by untrained teachers.

An examination of the wages paid to teachers in the United States shows clearly why teachers go into other lines of work

* From Detroit Research Bulletin No. 1, 1920, published by the Detroit Board of Education.

† From reports collected in September and October, 1919, by the Secretary of the National Education Association.

and why the number of graduates of teacher-training institutions has fallen off by half since 1917.

The average salary of *all* public school teachers in the United States for 1917-18 was \$630.64. In *cities* of all sizes during the school year of 1918-19 the median salary paid to elementary school teachers was \$856, to intermediate or junior high school teachers \$951, and to senior high school teachers \$1,224. Chart II* shows how teachers' salaries in the states of Ohio, Illinois, Indiana, Michigan and Wisconsin compare with the union scale of wages for thirteen occupations in Chicago and Cleveland.

This chart shows that the annual pay of hod-carriers in this section of the United States is \$394 more than the average salary of public school teachers; that bakers receive \$363 more per year than teachers; blacksmiths \$890 more, and structural iron workers \$1,024 above the average salary of

* From "Teachers' Salaries and Salary Schedules in the United States," by E. S. Evenden in National Education Association Bulletin Commission Series No. 6.

public school teachers. Chart III, which was used in a campaign to secure additional pay for teachers in St. Louis, Mo., shows graphically the extent to which the pay given to teachers is exceeded by that in most of the important trades, and also how the per cent of increase in the cost of living in St. Louis surpasses the increase in the salaries paid to teachers.

In a recent campaign for increased pay for teachers in Worcester, Mass., the following table was published to show how the salary increases of the teachers compare with those of public officers in that city.

SCHOOL AND OTHER SALARIES IN WORCESTER, MASS.

Position	1903	1919	Increased Per Cent
Mayor	\$2,500	\$5,000	100
Chief of Police	2,000	4,000	100
Chief of Fire Dept.	2,000	4,000	100
Deputy Chief of Police	1,500	3,000	100
Deputy Chief of Fire Dept.	1,300	3,000	130
Police Lieutenant	1,150	2,300	106
Police Sergeant	1,100	2,100	90
Captain Fire Dept.	1,100	2,300	110
Lieutenant Fire Dept.	1,050	2,100	100
Superintendent of Schools	4,000	5,000	25
High School Principal	3,000	3,750	25
High School Teacher (highest paid)	2,300	2,650	15
Grammar School Principal (highest paid)	2,100	2,800	33

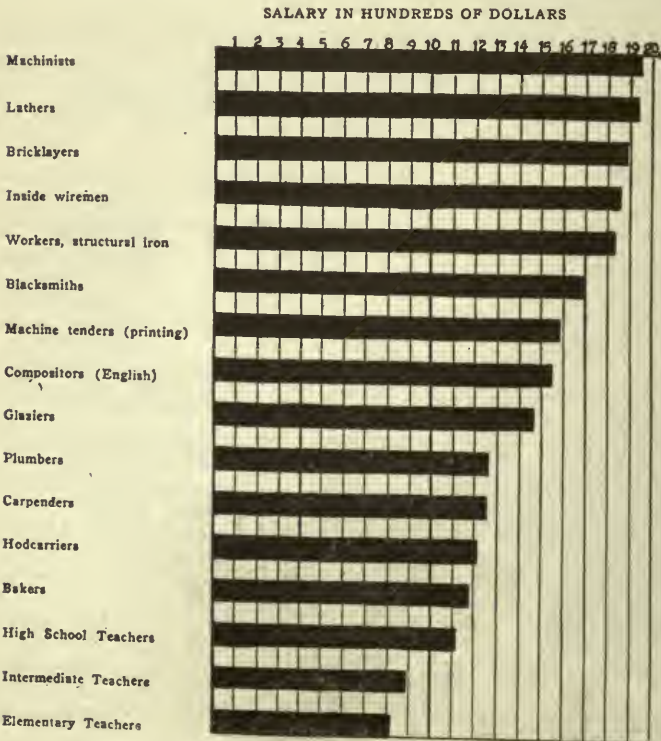


CHART II, A COMPARISON OF SALARIES OF SCHOOL TEACHERS AND MECHANICS

Some Communities Are Acting

In spite of the legal difficulties in the way of providing money to give teachers additional pay, many cities and some states have taken steps to remedy conditions. As this is being written, it is announced that the New York State Legislature has provided for an increase of from \$300 to \$600 per year in the pay of every teacher in the state. Chicago, Ill., and Omaha, Nebr., report flat increases of \$400, Ansonia, Conn., and Montclair, N. J., of \$500, Newton, Mass., of \$600 to \$1,000, and Houston, Tex., of \$700. New Bedford, Mass., adopted a new salary schedule on November 1, 1919, which carried with it an increase of 25 per cent over salaries in

INCREASE OF SALARIES, WAGES AND COST OF LIVING IN
ST. LOUIS SINCE 1911

1919; New Orleans, La., has decided on increases of from 30 per cent to 40 per cent, Hamilton, Ohio, of 33 per cent, and St. Paul, Minn., of 50 per cent. In Oakland, Calif., East Orange, N. J., Chicago, Ill., and St. Louis, Mo., the minimum salary to be paid to teachers has been put at \$1,200. Jersey City, N. J., has established a \$1,400 minimum, and the Detroit, Mich., Board of Education proposes a \$1,500 minimum for the school year 1920-21, with a general increase in teachers' wages which will make the 1920-21 pay of Detroit teachers 92 per cent above that of 1914.

A study of the situation, however, shows that increases such as those mentioned are exceptional. Reports from state superintendents of public instruction show that the

salary increases for teachers the country over have amounted to less than 30 per cent since 1914. During this six-year period the cost of living has increased, at the very least, by 80 per cent. Teachers who have energy, intelligence and self-respect could hardly be expected to lead the sort of slouchy existence which confronts them when they attempt to face an 80 per cent rise in the cost of living with a 30 per cent salary raise. It is no cause for wonder that young men and women are not preparing themselves for a kind of work which, at the present time, does not hold out the promise of a decent livelihood.

To put the pay of the teachers employed for the coming school year on a 1914 basis with respect to the purchasing power of their salaries would require, at the very least, \$200,000,000 over the salary expenditures of 1919-1920. That this is a conservative estimate is shown by the fact that the New York State Legislature has passed a bill which provides an addition of \$24,000,000 to the 1919-20 expenditures for teachers' salaries. New York State employs

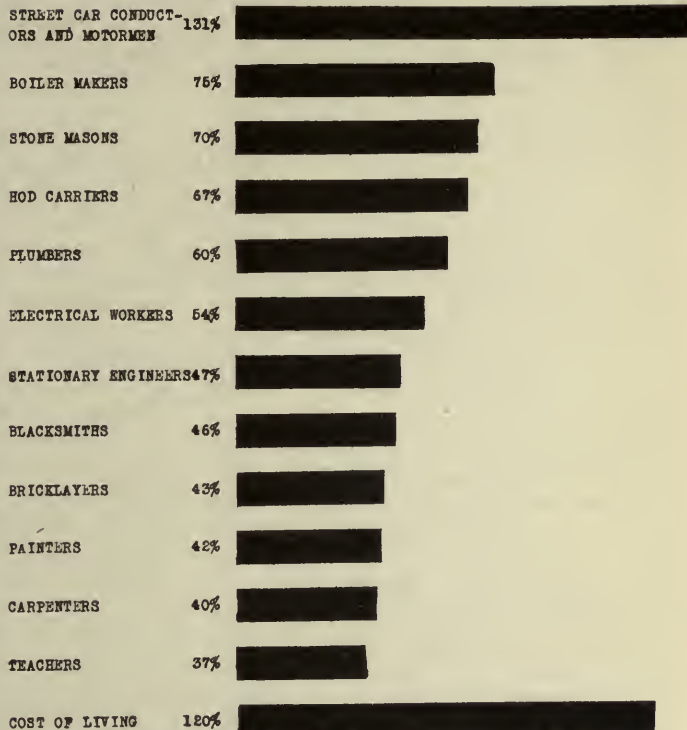


CHART III, SHOWING HOW TEACHERS HAVE BEEN HOLDING AN UNTENABLE POSITION

about 9 per cent of the public school teachers of the United States. If the other 91 per cent should receive the same increase for the year 1920-21 as that now adopted by the New York Legislature, more than \$250,000,000 above the amount paid for teachers' salaries in the United States during 1919-20 would be required. The necessity for raising \$200,000,000, or more, in order to increase the salaries of teachers may be called a crisis because it is a situation which must be met at once. Certainly no reasonable person supposes that good teachers can be secured by any other means.

**We Stopped Building Schoolhouses
During the War. Now—**

We need almost two-and-a-half billion dollars to provide the kind of schoolhouses which the proper education of American boys and girls seems to demand. Is there any basis in fact for making such a statement? Glance for a moment at the table on page 451. The fourteen cities listed there have recently voted a total of \$38,084,000, or \$22 per inhabitant, for school

building purposes. School building conditions in these cities are probably not worse than in the United States as a whole. If the rural sections are included, they are certainly better. A proportional expenditure for school buildings for the entire country would mean an immediate investment of about \$2,500,000,000 in the construction of school buildings.

The reason for the urgency of the school-building problem in every section of the country is two-fold. In the first place, building programs have been virtually held up for two years by the war. The scarcity of labor, the need of material for war purposes, and the patriotic desire to eliminate all possible activities except those which definitely contributed to winning the war, caused the general abandonment of building programs initiated immediately before the United States entered the war, and prevented new ones from being undertaken until the war ended. On this account many communities have outgrown their school plants, and overcrowding, half-day sessions and the forced use of portable and temporary school buildings have become evils which cry out for remedy.

In addition to that, a movement which started before the war to establish junior high schools for pupils of the seventh, eighth and ninth grades has returned with increased vitality. A large element of the American people have become convinced that the school work during the transition years from elementary school to high school must be better adapted to pupils' interests and needs. The large number of boys and girls who quit school during the seventh, eighth and ninth grades has given convincing evidence that a more vital and useful form of instruction is needed for those years. The conviction growing out of these facts has created a demand for a new type of high school building—the junior high or intermediate school. There are at the present time over 750 schools of this type in the United States, and in the 14 cities which have recently voted a total of \$38,000,000 for building purposes over 40 per cent of the projected new structures are to house junior or intermediate high schools. In the plans which are being considered for these buildings, there are provisions for gymnasiums with shower-baths and lockers for every boy and girl; domestic

science and art accommodations, including a model housekeeping suite; shops for teaching electrical wiring, wood-working and carpentry, printing, show-card writing, dressmaking, plumbing, and mechanical drawing. There are dental clinics, nurses' rooms and auditoriums fully equipped for school and community purposes.

But junior high schools represent only one element of the \$38,000,000 expenditure for school building purposes in these cities. Sacramento, Calif., is planning the erection of a new Polytechnic High School as well as fourteen grade-school buildings. Winston-Salem, N. C., is having plans drawn for a high school and two elementary school buildings. Omaha, Nebr., in addition to providing for five junior high schools, has included in its building program a million-dollar high school, \$700,000 for the completion of a commercial technical high school, and \$900,000 for elementary school buildings.

Why Oakland, Calif., Wanted New Buildings

As an example of the educational problems connected with the demand for new school buildings, two statements from city school superintendents made during recent campaigns for more money for building purposes are submitted. The first is from Superintendent Fred M. Hunter, of Oakland, Calif.:

OBJECTIVES OF THE OAKLAND SCHOOLS

Eight thousand Oakland boys and girls of high school age (two-thirds of the total number) are *not* in school and *not* being trained for citizenship by means provided for that purpose by the state—the public schools. Almost *eight hundred* Oakland boys and girls leave school each year between Grades VI and VIII unprepared for the service of their community and their country, and unequipped to be happy, useful, and contributive members of society.

Thirteen thousand Oakland school children (51 per cent of the total number in day high and elementary schools) are over age; that is, too old for the school grade in which they are working, because school methods and organizations have been inflexible and inadaptible. It costs more money to adapt school instruction and organization to child and community needs. False economy has been sacrificing boys and girls to keep the school tax rate low. Such a policy is wasteful because over-ageness costs the city of Oakland, at a conservative estimate, \$150,000 each year.

Funds raised from taxation effectively spent for public education are the only universal democratizing agency in any city or community. This agency offers to the poor man's son the opportunity in life which the rich man himself can buy for his son. Taxes for school purposes, if well spent, are the chief life resources of the masses of the people. The hue and cry against liberal tax levies for democratic education is the propaganda of social caste.

Sixty per cent of Oakland's population is foreign-born, or children of the first generation of foreign parentage. Sixteen schools in Oakland have a per-

centage of foreign children ranging from 50 to 70 per cent. These water-front schools are the most poorly equipped for industrial training, for community center work and for Americanization of all the schools in Oakland. As yet Oakland has no well-developed organization within the schools for Americanization purposes. Alameda County has over 7,000 illiterates and a rapidly increasing foreign population.

The Case for New Buildings in Lincoln, Nebr

The second is from Superintendent Jesse H. Newlon, of Lincoln, Nebr.:

FIVE ARGUMENTS FOR THE BOND ISSUE

1. The rapid increase in the enrollment in the Lincoln schools during the past fifteen years has overcrowded the elementary school buildings and made necessary the use of 22 basement rooms and 35 cottage rooms (April 24, 1919), not one of which is a suitable place in which to hold school. These rooms endanger the health of the children and make good school work next to impossible. The children must be provided with hygienic schoolrooms. From the standpoint of health alone, the need of new buildings could scarcely be more imperative.

2. The enrollment at Lincoln High School has increased 500 in the past five years. The present building will not accommodate the school for more than

not free from debt. These cities owed from \$1,506,580 to \$41,444,403 for all city purposes at the close of the year 1918, of which from \$170,000 to \$8,000,000 was for school buildings already erected.

How does it happen that the people voted, for the purpose of increasing teachers' salaries, \$1,100,000 in St. Louis, Mo., \$500,000 in Portland, Ore., and \$250,000 in Houston, Tex.? Was it by mere chance that Denver, Colo., Mansfield, Ohio, Pontiac, Mich., Durham, N. C., and Bucyrus, Ohio, recently voted a total of \$5,300,000 for school building purposes? What was done to get the cities listed in the table to vote over \$38,000,000 to build schoolhouses?

Campaigns of Public Information

An investigation of the means used to get

CITIES WHERE SUCCESSFUL CAMPAIGNS FOR ADDITIONAL FUNDS FOR SCHOOL BUILDINGS HAVE BEEN RECENTLY CARRIED ON

	Amount Voted for Building Purposes	Estimated Population* in 1918	Funded, Floating and Special As- sessment Debts for City at Close of Fiscal Year 1918*	Portion of 1918 Funded Floating and Special As- sessment Debt In- curred for School Building*
St. Paul, Minn.....	\$3,000,000	252,465	\$16,750,940	\$1,940,000
Sacramento, Calif.....	3,064,000	68,984	5,252,940	1,003,000
Johnstown, Pa.....	2,000,000	70,473	1,506,000	576,000
Buffalo, N. Y.....	8,125,000	479,392	41,444,403	8,004,419
Omaha, Nebr.....	5,000,000	177,777	22,594,550	2,921,000
Winston-Salem, N. C.....	800,000	33,509	3,325,940	170,000
Lincoln, Nebr.....	2,000,000	46,828	2,281,807	422,800
Berkeley, Calif.....	2,300,000	61,814	1,719,373	993,250
Oklahoma City, Okla.....	1,820,000	99,910	7,348,048	1,815,748
Cedar Rapids, Iowa.....	1,500,000	36,214	1,125,900	386,000
Tulsa, Okla.....	1,000,000	33,474	3,197,214	1,142,080
Salt Lake City, Utah.....	2,100,000	121,623	9,037,778	1,714,000
Lexington, Ky.....	400,000	41,997	1,779,516	236,000
Oakland, Calif.....	4,975,000	210,305	8,892,030	3,196,434
Total	\$38,084,000	1,734,765	\$126,256,439	\$24,520,731

* From Financial Statistics of Cities, 1918, Bureau of Census, Washington, D. C.

two or three years longer. Relief must be provided.

3. In the five months since the close of the war, the total enrollment of the schools has increased over 500. This is equivalent to 12 rooms of 40 pupils to the room or, in other words, a 12-room school, such as the Everett School, which enrolls slightly more than 500 pupils. If this rate of increase in the school enrollment continues, the city faces a momentous problem.

4. The Lincoln School buildings are overcrowded; half the elementary schools are unsanitary, and none is suited to the needs of a junior high school organization. We are unable, therefore, to offer in the 7th, 8th and 9th years a course of study embodying the best practice of the best school systems. Likewise, thru lack of shops at the Lincoln High School, it is impossible to offer in the institution the industrial arts courses that are offered in the best high schools thruout the country.

5. When completed, this building program will provide both the necessary additional sanitary rooms and the types of buildings required by the course of study of a modern system of schools.

The table shows that the cities which voted \$38,084,000 for school buildings were

people to vote money to increase the pay of teachers and build new schoolhouses in the cities referred to shows that a more or less uniform method was used in presenting the case to the people. This procedure might be summed up in the following:

TEN RULES FOR CONDUCTING A CAMPAIGN FOR ADDITIONAL SCHOOL FUNDS

1. Lay a careful basis for the campaign by preliminary publicity through newspaper articles and school bulletins.

2. Have a careful, accurate and complete survey made of that part of the school system for which the appropriation is desired.

3. Give the findings of the survey the widest publicity thru newspaper articles and special pamphlet publications written in popular style.

4. Have a definite organization for making the public fully acquainted with all the facts as to why the money is needed.
5. Secure the coöperation of the civic and commercial organizations in the city.
6. Use the school children. They are excellent campaigners.
7. Use the newspapers to keep the people advised about the progress of the campaign.
8. Utilize modern advertising methods in presenting the case to the people.
9. Make the last days of the campaign intensive.
10. Have a definite plan for getting out the vote on election day.

How Oakland, Calif., Did It

Oakland, Calif., where \$4,975,000 was voted on October 21, 1919, for the erection of school buildings, affords an excellent example of the sort of publicity which reaches the voters. Briefly summarized, here is what Oakland did:

1. An "Advisory Bond Committee" representing commercial, civic and improvement clubs was appointed three years ago. This committee made a thorough study of the needs of the city and assisted in the formation of a publicity program.
2. Careful surveys were made showing the existing conditions and educational needs of the city.
3. A final campaign was launched on

August 25, 1919, just eight weeks before the date set for the election.

4. Letters were sent to all clubs and organizations in the city asking their support.
5. The advertising club sent precinct workers into the most doubtful districts.
6. A group of four-minute speakers was organized and a special schedule arranged.
7. The newspapers were actively enlisted in the campaign. About \$1,500 was spent for newspaper display advertising.
8. Posters were placed in the windows of down-town and local neighborhood stores, and immense signs were placed upon all the schools.

9. An expert publicity man was employed to work under the direction of the city Superintendent of Schools. His duty was to handle the newspaper publicity, newspaper advertising, and moving pictures, and to be present at the conference of leaders held each morning in the Superintendent's office.

10. About \$500 was invested in short sketches to be used in the movies during the two weeks immediately preceding the election.

11. A school paper was published covering the issues in the bond campaign and distributed to parents by the school children.

12. The school children did most effective work by means of letters and personal appeals to parents and by participating in parades conducted in each school district of the city. On the day before the election a monster down-town parade was held in which 17,000 children participated.

Inadequate Salaries Force Scientific Men Out of the Public Service

Dr. Van H. Manning, Director of the Bureau of Mines, Department of the Interior, has tendered his resignation, effective June 1, to President Wilson. Dr. Manning is leaving the Government service to accept the position as Director of Research with the recently organized American Petroleum Institute.

In his letter to the President, Dr. Manning says: "I hereby tender you my resignation, to take effect June 1, 1920, as director of the Bureau of Mines.

"In leaving the Government service there comes to me, as it has over and over again, the thought that although this Government spends each year many millions of dollars in useful scientific work for the benefit of the whole people, the monetary recognition of its scientific and technical servants is not sufficient to enable them to continue in the service for the people. This has been es-

pecially true within the last few years, when it has been impossible for many men to remain in the Government service.

"With the marvelous expansion of industry in this country and the growing necessity of science to industry, the scientific bureaus have been utterly unable to hold their assistants against the competition of industry, which is taking their highly trained men at salaries the Government does not pay or even approach.

"I feel very deeply that there ought to be more adequate compensation for the scientific and technical men in the Government service so that none of them may be compelled to accept positions on the outside. Many of these scientific men are of fine type for Government work; care little for the commercial field; take an intense professional interest in their tasks and are of inestimable value to the Government."

Chambers of Commerce Coöperate with Boards of Education in Meeting the Educational Crisis

CHAMBERS of commerce in the cities of the United States with a population of 8,000 and more have been asked to coöperate with city superintendents of schools and school boards in analyzing the present school situation and determining the facts on which to base school plans for the future. The chambers of commerce have been asked to take the leadership in organizing community forces in support of the schools, and through local campaigns of publicity to acquaint the citizen taxpayer with public school service and its needs and to secure an intelligent and adequate support for a program of improvements.

The decision to undertake this inquiry grew out of a conference of secretaries of chambers of commerce and superintendents of schools which was held in Cleveland, Ohio, on February 24 at the invitation of the American City Bureau, of New York, to initiate and carry through a plan to help meet the crisis confronting the public schools of this country. It was the opinion of all those present at this meeting, particularly of the superintendents of schools, that the coöperation of civic and commercial organizations with the city school officials was of vital importance in bringing together all classes of the community in support of a program of improvements planned to overcome the conditions which now menace the public schools.

At this meeting the National Committee for Chamber of Commerce Coöperation with the Public Schools was organized. George D. Strayer, Teachers College, Columbia University, was elected Chairman; Herbert S. Weet, Rochester, N. Y., Vice-Chairman, representing school superintendents; H. A. Davidson, Erie, Pa., Vice-Chairman, representing secretaries of chamber of commerce; Fred A. Richardson, Secretary American City Bureau, Secretary of the Committee. The Executive Committee comprises the officers above named and Henry Snyder, Superintendent of Schools, Jersey City, N. J.; R. G. Jones

Superintendent-elect of Schools, Cleveland, Ohio; J. H. Beveridge, Superintendent of Schools, Omaha, Nebr.; Raymond B. Gibbs, Secretary, Chamber of Commerce, Kansas City, Kans.; S. B. Price, Secretary, Chamber of Commerce, Bridgeport, Conn.; and E. L. McColgin, Secretary, Chamber of Commerce, Dayton, Ohio. The following secretaries of chambers of commerce and superintendents of schools were also elected members of this committee:

SECRETARIES, CHAMBERS OF COMMERCE

H. E. Patterson, Fresno, Calif.
 Chas. E. Robertson, Atlanta, Ga.
 Ernest H. Krueger, Springfield, Ill.
 J. B. Reynolds, Indianapolis, Ind.
 R. H. Faxon, Des Moines, Iowa.
 Chas. E. Westervelt, Auburn, Me.
 A. S. Goldsboro, Baltimore, Md.
 Simms Jamieson, Hagerstown, Md.
 Walter O. Lochner, Attleboro, Mass.
 C. D. Jackson, Springfield, Mass.
 Lee H. Bierce, Grand Rapids, Mich.
 J. C. Beukema, Manistee, Mich.
 Wm. A. Searle, Camden, N. J.
 M. D. Griffith, Elizabeth, N. J.
 John J. Fitzgerald, Paterson, N. J.
 Roy S. Smith, Albany, N. Y.
 Mayo Fesler, Brooklyn, N. Y.
 James T. Badgley, Dunkirk, N. Y.
 Ed. D. Bevitt, Lockport, N. Y.
 Howard Strong, Rochester, N. Y.
 J. T. Daniels, Columbus, Ohio.
 F. F. Eubank, Sandusky, Ohio.
 Chas. E. Hall, Oklahoma City, Okla.
 W. D. B. Dodson, Portland, Ore.
 Earl S. Weber, Bradford, Pa.
 Hal F. Wiltse, Chattanooga, Tenn.
 W. A. Cox, Norfolk, Va.
 James A. Ford, Spokane, Wash.
 Don E. Mowry, Madison, Wis.

SUPERINTENDENTS OF CITY SCHOOLS

H. B. Wilson, Berkely, Calif.
 Fred M. Hunter, Oakland, Calif.
 Carlos M. Cole, Denver, Colo.
 S. J. Slawson, Bridgeport, Conn.
 Stanley H. Holmes, New Britain, Conn.
 C. B. Gibson, Savannah, Ga.
 J. H. Bentley, Richmond, Ind.
 Frank L. Smart, Davenport, Iowa.
 J. W. Gowans, Winfield, Kans.
 J. M. Gwinn, New Orleans, La.
 Frank V. Thompson, Boston, Mass.
 H. L. Belisle, Fall River, Mass.
 F. E. Cody, Detroit, Mich.
 Paul Stetson, Muskegon, Mich.
 C. L. Jenner, Pontiac, Mich.
 F. P. Calloway, Moberley, Mo.
 John W. Withers, St. Louis, Mo.
 J. H. Newlon, Lincoln, Nebr.
 Z. E. Scott, Trenton, N. J.
 James R. McGaughy, Belle Center, Ohio.
 R. J. Condon, Cincinnati, Ohio.
 E. B. Oberholtzer, Tulsa, Okla.
 I. B. Bush, Erie, Pa.
 Wm. M. Davidson, Pittsburgh, Pa.
 S. E. Weber, Scranton, Pa.
 Isaac O. Winslow, Providence, R. I.
 C. S. Meek, San Antonio, Texas.
 A. H. Hill, Richmond, Va.
 F. B. Cooper, Seattle, Wash.

At this conference it was decided that effective aid by the chambers of commerce could be brought about only on the basis of a careful inquiry which would enable each organization to know how its local situation compared with that of other cities throughout the nation, and the Executive Committee has planned five separate inquiries to cover the following subjects:

Inquiry Number One:

How much training do your teachers have?
How well do you pay your school employes?
What special inducements do you offer the teachers in your schools?

Inquiry Number Two:

How well do you house your school children?

Inquiry Number Three:

What is your educational program?

Inquiry Number Four:

How adequately do you safeguard the children's health?

Inquiry Number Five:

How much does education cost your city?
How will the rising costs be met?

The first inquiry is already under way, and when completed will furnish answers to the following questions:

1. What are the salaries now paid to women teachers in elementary, junior high, senior high, normal schools and junior colleges in American cities?

2. What are the salaries for men teachers in the same types of schools?

3. What is the actual training of American city teachers in each of these classes of schools?

4. How much experience have these teachers had?

5. What are the present salaries of superintendents of schools, assistant superintendents, attendance officers, research men, normal school and junior college principals?

6. What are the salaries of all other school employes according to classes, such as medical inspectors, dentists, supervisors, elementary and high school principals, clerks, janitors, librarians and school nurses?

7. How much have men and women teachers' salaries been increased in each of the different types of schools since 1914?

8. How do the salaries of men teachers compare with those of women in each of the different types of schools?

9. What per cent of increase has been determined on in teachers' salary schedules for the coming school year?

10. Are teachers actually leaving the profession in as large numbers as is commonly

reported? Are they going into other ¹⁰⁵ of work?

11. Are increases in teachers' salaries keeping pace with increases in the cost of living since 1914?

12. Is it true that in American cities generally there is no such thing as tenure for teachers, and that by the very nature of the terms of their employment, teachers are led to look on their positions as of uncertain duration?

13. Have cities generally provided teacher retirement systems so that the teachers may look forward to some provision for old age?

14. Are cities where teachers' pension or retirement plans are in force able to employ better qualified teachers for less money than cities which do not have such plans?

Every community will be interested to know these facts about its own school system and to find out what other cities are doing. When the results of all the city inquiries are forwarded to the Secretary of the Executive Committee on forms which it devised and which have been printed and distributed by the American City Bureau, the information will be transferred to cards, tabulated and classified, so that comparative tables, mediums and averages for all the coöperating cities will be quickly made available. This first inquiry will not only enable each community to know the teachers' situation in its schools, but will furnish it with a nation-wide basis for judging its own practices. Interpretive reports on these several inquiries will be published one after another as rapidly as they can be completed.

As information from this survey becomes available, special articles will be written by able educators in the country and given to the chambers of commerce in all cities that have participated in this survey, for use in local publicity campaigns. To each chamber of commerce also the American City Bureau will furnish suggestions for procedure for conducting campaigns in support of the schools.

This program of survey, interpretive reports and specially prepared articles for a campaign of publicity will furnish cities a basis never before available for meeting the emergency which confronts the public school system, arousing public interest and directing public opinion.

Municipal Meat Inspection

By Dr. John R. Mohler

Chief of the Bureau of Animal Industry, U. S. Department of Agriculture

ALTHO the federal meat-inspection service is widely known thruout the length and breadth of the land, and enjoys the full confidence of the people at large for the protection it affords to meat consumers, it may not be so well known that a considerable proportion of the meat produced in the United States is not subject to government inspection. The federal authority is, in fact, powerless to exercise any supervision over meat that is slaughtered, prepared, sold, and consumed entirely within a single state. According to the latest estimate, the proportions of meat federally inspected and not so inspected are two-thirds and one-third, respectively. Expressed in pounds of dressed beef, mutton, and pork (without lard), the Bureau estimates the total weight of meat produced during 1918 to be slightly over 18 billion pounds, and consequently the quantity not federally inspected was 6 billion pounds. Some of the latter underwent a local or municipal inspection ranking anywhere from efficient to perfunctory, and without doubt a large proportion of it had no inspection of any sort.

This uninspected meat is a direct menace to the public health, especially since it is handled in slaughter-houses that receive a much larger percentage of diseased and suspicious-looking animals than is the case in federally inspected establishments. Food animals are subject to many diseases and conditions that render their flesh unfit for human consumption, and fresh meat at best is a perishable article. Even in the establishments under government supervision there is annually condemned and destroyed approximately 1 per cent by weight of the meat slaughtered, manufactured, etc. Applying this percentage to the 6 billion pounds of meat above mentioned, we find that at this very low estimate 60,000,000 pounds should have been condemned. We do not know what quantity actually is condemned outside the federal service, but there is good reason to suspect that in the aggregate a vast quantity of unfit meat enters into the channels of local trade. It is disquieting at least to contemplate how much of this

dangerous meat is actually consumed by the unsuspecting public.

Need of Local Inspection and Public Abattoirs

Unquestionably the federal supervision of meat needs to be supplemented by an efficient local or municipal system if consumers are to be adequately protected. In a great many cases, however, the local problems are somewhat different from those of government inspection. The latter is conducted mostly at the larger establishments and packing-houses, whereas the local authorities must often deal with small, scattered, poorly equipped, and very insanitary slaughter-houses. It is sometimes out of the question to require a reconstruction of buildings and the installation of more or less expensive equipment, which would be necessary in order to bring about a proper sanitary condition.

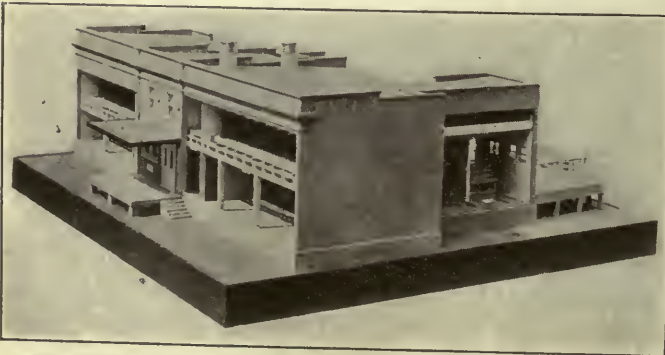
Wherever these small butchering places flourish, it is highly desirable to concentrate the slaughtering for each community in one place. It is recognized that the public abattoir, whether municipally or privately owned, affords the most practical way in which a community can properly protect its citizens against diseased and unwholesome meats, because only at such central places can the requirements of a thoroly efficient system of inspection be economically carried out. The butchers, also, should be able to do their slaughtering more economically.

Recent Survey of Municipal Meat Inspection

The Bureau of Animal-Industry has from time to time made efforts to stimulate state and local inspection of meat for that portion of the supply that is beyond the reach of the federal system. These efforts, together with those of other public-spirited organizations, have borne fruit to a limited extent, inasmuch as it is known that at certain places an adequate supplementary system is in force. However, no accurate information as to either the quantity or the quality of such inspection as a whole had been available. In order, therefore, to obtain

Summary, by States, of Reports from Cities Concerning
Municipal Meat Inspection

State	Cities Report- ing	Cities Maintaining Inspection	Slaughterhouses			Inspectors Engaged			Annual Cost of Meat In- spection
			Municipal	Central (public)	Private	Whole Time	Part Time	Average Salary	
United States.....	576	197	15	12	1387	226	185	\$1,442	\$447,345
Alabama.....	7	5		1	7	1	5	\$1,533	\$2,500
Arizona.....	5	1			9		1	1,620	810
Arkansas.....	5	2			15		2	1,500	1,800
California.....	20	9			82	44	5	1,637	81,718
Colorado.....	8	4			18	8	5	1,343	16,450
Connecticut.....	12	2	1		11	3		1,420	8,000
Delaware.....	1	1			6			1,350	1,350
Dist. of Columbia..	1	1			12	2		1,100	2,200
Florida.....	5	4			6		2	1,360	2,580
Georgia.....	10	6	2	4	7	8	6	1,600	16,400
Idaho.....	3				6				
Illinois.....	37	4			34		6	1,350	1,850
Indiana.....	28	3			57	4	4	1,050	6,800
Iowa.....	16	4			20	4	1	1,410	4,320
Kansas.....	14	1			31		2	1,500	1,000
Kentucky.....	8	3			44	14	2	1,350	16,200
Louisiana.....	6	4	1		10	18	3	1,704	19,120
Maine.....	7	1			7			1,500	1,800
Maryland.....	3	1			7	1	3	1,200	2,000
Massachusetts.....	51	45		1	51	5	52	1,036	2,798
Michigan.....	21	6		1	84	5	5	1,455	11,455
Minnesota.....	11	7	1	2	100	6	2	1,293	9,360
Mississippi.....	4	1			12			1,200	1,200
Missouri.....	16	3	1		65	5	1	1,440	7,420
Montana.....	5	3			14	1	2	1,620	1,800
Nebraska.....	11	2		1	25	6		1,450	11,200
Nevada.....	1				3				
New Hampshire.....	5	1			9		1		
New Jersey.....	29	11			38	4	17	1,574	18,947
New Mexico.....	1				2				
New York.....	38	14			53	11	10	1,400	22,117
North Carolina.....	7	4	1		5	2		1,500	4,700
North Dakota.....	3	1	2		2		1		600
Ohio.....	41	9			142	22	16	1,355	47,920
Oklahoma.....	3	1			1		1		
Oregon.....	6	1			9	5		1,896	9,480
Pennsylvania.....	46	4			181	8	3	1,350	15,640
Rhode Island.....	7	3			10	2	1	1,350	3,840
South Carolina.....	2	1	1		2		1		900
South Dakota.....	2				2				
Tennessee.....	6	3			27	4	2	1,140	6,550
Texas.....	18	9	3		33	11	6	1,353	20,720
Utah.....	3	2			10	8		1,485	12,200
Vermont.....	4				4				
Virginia.....	7	4	1	2	10	2	3	1,733	6,300
Washington.....	8	2	1		14	6		2,040	13,500
West Virginia.....	2	1			6		1		
Wisconsin.....	20	3			79	2	9	1,600	11,800
Wyoming.....	2				3				



THE BUREAU OF ANIMAL INDUSTRY'S MODEL MUNICIPAL
ABATTOIR FOR A SMALL CITY

more complete data on the subject, a questionnaire was prepared and sent to all cities and towns shown by the census to have a population of 5,000 or more.

The main facts brought out by the investigation are seen in the above table.

Character and Extent of
Municipal Inspection

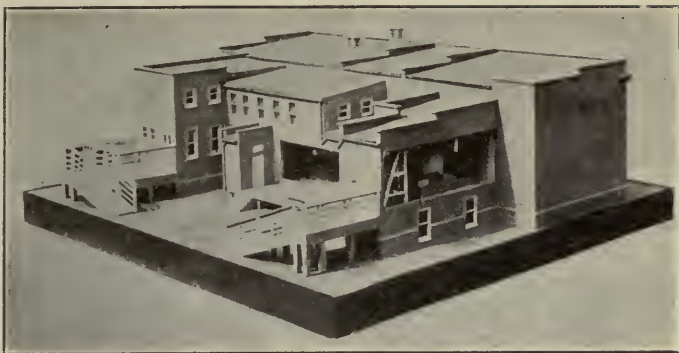
The questionnaire was sent to slightly over 1,400

cities, of which 576 responded. The number actually maintaining a system of meat inspection was only 197, the remaining 379 reporting they had no inspection.

The table shows that Massachusetts easily leads in number of cities maintaining inspection, the other most prominent states in this respect being New York, New Jersey, California, Ohio and Texas. The reports indicated, however, that the federal standard of inspection is more uniformly maintained in California and New York than in the other states mentioned. It may be noted, too, that California is far ahead in the number of inspectors devoting their whole time to meat inspection.

The leading cities where municipal inspectors devote their whole time to meat inspection, as reported on the questionnaires, are New Orleans, San Francisco, Louisville, Cleveland, Oakland, Calif., Los Angeles, Denver, and Columbus, Ohio. The total number of inspectors reported as devoting their whole time to municipal meat inspection is 226, and 185 others were engaged part of their time, the latter, of course, mostly in the smaller cities where the duties include supervision of milk, other foods, etc.

The infrequency of city meat inspection may be judged from one angle by comparing the number of employes with similar figures for the federal service, bearing in mind, of course, the proportions of two-thirds federal to one-third municipal, to correspond with the relative quantities of total meat handled. According to the latest figures the number of federal meat inspectors, leaving out clerks, laboratory workers, and other employes not engaged in actual inspection work, is slightly more than 2,300. These men devote their whole time to the work, not to mention a great deal of overtime, and the work is so systematized that the quantity performed per man is no doubt relatively greater than that of a city in-



THIS MODEL ABATTOIR IS DESIGNED TO HANDLE ON CATTLE-SLAUGHTER FLOOR, 10 BEEVES, 10 SHEEP, 10 CALVES PER HOUR; ON HOG-KILLING FLOOR, 6 HOGS PER HOUR; ON CATTLE CHILL ROOM, 120 CARCASSES; ON HOG CHILL ROOM, 100 CARCASSES

Additional information may be secured from the Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

spector. On the basis mentioned there should be about 1,200 whole-time inspectors to take care of the one-third meat production that is not federally inspected; in fact, this number should be greatly exceeded because of the sporadic and uncanceled character of the work.

Municipal and Central Abattoirs

One of the principal objects of the investigation was to ascertain how many municipal and central, or public, slaughterhouses there were in the country and what was the nature of the inspection conducted in connection with them. The reports showed there were in all 27 such abattoirs, 15 being owned by the various municipalities, and 12 privately owned and operated under city supervision. They were located in the following cities:

Municipal Abattoirs

Bridgeport, Conn.
Albany, Ga.
Macon, Ga.
Baton Rouge, La.
St. Cloud, Minn.
Joplin, Mo.
Winston-Salem, N. C.
Devil's Lake, N. Dak.
Grand Forks, N. Dak.
Laurens, S. C.
Beaumont, Tex.
Paris, Tex.
Taylor, Tex.
Winchester, Va.
Yakima, Wash.

Central Abattoirs

Anniston, Ala.
Atlanta, Ga.
Columbus, Ga.
La Grange, Ga.
Savannah, Ga.
Pittsfield, Mass.
Detroit, Mich.
Moorfield, Minn.
St. Paul, Minn.
Lincoln, Nebr.
Norfolk, Va.
Roanoke, Va.

It may be noted that the abattoirs are widely distributed geographically and that the state of Georgia leads with a total of six; Minnesota, Texas and Virginia each have three, with two in North Dakota.

Competition for the Remodeling of a Tenement House Block in New York

THE Reconstruction Commission and the Joint Legislative Committee of the State of New York announce a competition, the object of which is to make habitable the thousands of old, unoccupied tenements in the city of New York. It is hoped to find a method of improving living conditions in these old houses without entirely destroying the buildings, and to find a plan of remodeling that will encourage such alterations by the demonstration of its economic wisdom.

The Reconstruction Commission has pointed out in its Housing Report that there is need of at least 40,000 new apartments in New York City at the present time, and yet there are thousands of apartments that are unoccupied. The latest census of vacant apartments, taken last year, shows a total of 21,482. A careful investigation made by the Reconstruction Commission at that time showed that practically none of these empty apartments were fit for human habitation.

Most of the defects of the old-law tenements are due to poor planning. Their value not only in terms of better living conditions, but also as a financial investment, would be enhanced if they were properly planned. It has been proved within the last few years that with the use of double the area required by the law for court space, apartments can be designed on the same sized lots so as to give at the same rental per room a greater return on the investment.

The investigations of the Housing Committee of the New York State Construction Commission, which are described in the report of the Commission to the Governor,* proved conclusively that the old-law tenement houses are a menace to the health and general welfare of those who dwell in them and of the community as a whole. The most obvious defects of these buildings are: (1) the lack of sufficient air and light; (2) insufficient and foul toilet facilities; (3) the prevalence of bad odors; (4) the lack of conveniences and comforts, even of

the requirements of decent living; (5) the lack of privacy; (6) insufficient protection from fire; (7) the dreary, unwholesome environment of the homes.

For the purpose of finding a way to re-plan these old tenements without destroying them, a characteristic block on the lower East Side—that bounded by Rutgers, Madison, Jefferson and Monroe Streets—has been chosen. The competitors will be supplied with plans at $\frac{1}{8}$ -inch scale, showing the actual conditions of all the buildings in the block. They will be required to submit plans at the same scale, showing the alterations they consider necessary. The block which forms the subject of the competition contains tenements of the dumb-bell type as well as the earlier type with no interior court. In these houses, three-quarters of the rooms have no windows opening on the outer air. Two hundred and seventy of the rooms in the block have no light or air excepting that which is borrowed from neighboring rooms. Living conditions in this block are by no means the worst in the city. Conditions here are characteristic of those to be found in hundreds of other blocks throughout the city.

Copies of the program of the competition, as well as the drawings showing the existing condition of the block which is the subject of the competition, can be secured from Clarence S. Stein, Secretary of the Housing Committee, Reconstruction Commission, State of New York, Room 302, Hall of Records, New York City.

The competition is open to everyone. Two prizes of \$1,000 each, four prizes of \$500 each, and an equal number of prizes of \$250 each are offered. The prizes were contributed by Alfred E. Marling, Vincent Astor, and the New York Foundation.

The jury of the competition, which will close on the 15th of June, will be: Allan Robinson, Alfred E. Marling, Edgar A. Levy, Frank Mann, Tenement House Commissioner, Clarence S. Stein, Senator Charles C. Lockwood, Senator John J. Dunnigan, Andrew J. Thomas, Burt Fenner, Robert D. Kohn, Miss Lillian Wald, Alexander M. Bing, and D. Everett Waid.

* This report may be secured from the Reconstruction Commission, Hall of Records, New York City.

Wood-Block Paving in Little Rock, Ark.

By John B. Woods

ARKANSAS summers as a rule are quite warm, with an occasional very heavy shower to keep the crops growing, and the past season was no exception. In fact, the heat was rather more intense than usual and the showers were far more frequent. This was bad for the wood-block pavements. During the hot days they lay under the sun, oozing out their creosote and tar, and then when the showers came they buckled into hundreds of small hills; until in certain cases the street cars were unable to pass over the hummocks between the rails. The Street Department of Little Rock sent men out and dug up enough blocks to allow the cars to pass, and tried also to maintain the roadways in condition for vehicle traffic. But one night there came a particularly severe storm, and the flood water coursed down along one of the water-front streets, slipped under a stretch of buckling block pavement, and carried it away bodily. Something like 300,000 blocks went sailing down the Arkansas River. So the Street Department went to work to rebuild the badly damaged streets and to repair all others in an entirely new way.

There are nearly 11 miles of wood-block paving in the city, the greater portion of this being 30 feet wide. And during the course of nine years of experience with such material the engineers have reached several interesting conclusions about wood block. For example: In the down-town section, where traffic is heaviest, the pavement has given almost perfect satisfaction. There are two or three streets which have been down for eight or nine years and which even now are in perfect condition. F. J. Donahue, the present Street Commissioner, believes that this excellent wear is due to the fact that these down-town streets are flanked by high buildings. Out in the residential districts and down by the water-front the buildings are lower and farther from the curbsings, so that in summer the sun has free access to the surfaces of the streets and causes the blocks to bleed freely. Moreover, the shaded areas retain moisture longer and thus reduce the variation between wet and dry conditions during the warm seasons, thereby lessening the expansion and contraction of the wood. Then there is the question of adjoining streets. In the busi-



THE JUNCTION OF A BOULEVARD AND A CAR-LINE STREET IN LITTLE ROCK, SHOWING THE DESTRUCTION OF THE WOOD-BLOCK SURFACING, A TROUBLE WHICH WAS LATER SATISFACTORILY REMEDIED

ness section all streets not of wood are of other hard materials, while out in the residential regions there is much gravel roadway. And this gravel is brought to the block pavements and dumped there by passing wheels, working into the joints and rendering them subject to water seepage. The presence of grit upon the surfaces speeds up the wear and tear also, as may be readily imagined.

Foundations

There does not appear to be much difference between old and new foundation construction so far as durability and satisfaction are concerned, for nearly all the pavements were laid upon cement blankets with cushions of sand. Of course, the blankets were laid to suit the traffic, being 4 or 5 inches thick according to location. The best-wearing streets are laid upon foundations of the same type as the bad-actors. However, in the future the engineers are going to introduce the best methods known to other southern cities and set their blocks in a bed of concrete. On top of the old blankets they will put a cushion of sand and cement in a 3 to 1 mixture. This they will float and then sprinkle with hand sprinklers, and set the blocks in it. Then they will squeegee with Tarvia A, and as soon as the pavement has set they will seal with more of the same to render the surface impervious to sun and moisture. This practice has met with a large measure of success in Louisville, Ky., where conditions are not very different from those in Arkansas.

There is one very important consideration, however, which in the past has handicapped the engineers of Little Rock, and probably has been largely responsible for the bad behavior of many streets. That is the matter of paving labor. Most of the pavers employed on street work in the southern states are of necessity negroes. They can withstand the hot sun and the hard work in combination better than white men. But the negro laborer is a born grand-stander. He is happiest when working under the gaze of white people, and the greater his audience the less becomes his mental application. So it often comes about that while laying blocks the pavers cease to remember the rules of the game, and throw blocks into place as fast as their muscles can work, without making any allowance at all for expansion. Thus when the rains come,

the blocks immediately swell, and having no room to expand horizontally they push each other up from the blanket foundation and assume the shape of hillocks and mountain ranges. This human fallibility is to be taken care of in the future by using long strips of corrugated paper, $\frac{1}{4}$ -inch thick, to be laid between the blocks in curb-to-curb courses. Then they will squeegee with Tarvia A heated to 250 degrees, and expansion will be allowed for.

New Plans for Paving

The plans for rejuvenating the city streets contemplate three different operations, depending upon the conditions to be met. In the first place, there is not enough money available to replace wood block by some other material, even if the engineers desired to do so. Then there is the matter of street car tracks which have been laid to correspond to the wood-block thickness of 3 inches. If the blocks were to be replaced by something else, there would be the problem of filling the streets with 3 inches of new paving, a proposition that would run into much money. The three operations to be performed are the laying of new blocks to take the place of the large numbers lost in the river and broken by workmen in process of removal, the relaying of old blocks, and the treatment of streets still in good condition, so that they will have a new lease of life. Naturally there are many places where the underlying blankets have been ruined by traffic after their coverings of wood were removed, so a certain amount of work will be needed to put them in shape for repaving.

New block is expensive nowadays, for the lumber market has gone sky-high along with every other market. Probably the new work will cost at least \$6 per square yard, as $3\frac{1}{2}$ -inch blocks treated to 16 pounds creosote are worth \$2.52 per yard delivered at Little Rock, while labor is among the expensive considerations. The old blocks can be used to rebuild upon old foundations, using such blocks as are either in the streets or piled nearby, at an estimated cost of \$1.50 per square yard. The treatment of the good streets is the cheapest, of course; the engineers estimate that it can be done for not more than 20 cents per square yard. This work is of interest because it is new to Little Rock and bids fair to solve certain of the city's gravest problems.

After several years of alternate bleeding and soaking with water, wood blocks seem to lose their powers of resistance, or, as the engineers say, they are "lifeless." So the idea is to seal this surface with some impervious and durable material to keep out both heat and moisture. And where gravel streets are a menace, this covering will keep out the grit as well. The process is simple. First, the blocks will be brushed clean of grit and foreign matter; then they will be treated with Tarvia B to seal all joints. After twenty-four hours the pavement will be squeegeed with Tarvia A and sanded, using one cubic yard of sand to each thousand yards of area, and the whole will be rolled. To all appearances the resulting pavement will be new, and it is expected to wear like new also. The city of Memphis has tried this method, and the engineers in that place are very well pleased with the results. Visitors have been known to state that the streets in Memphis were quieter and more comfortable for the passenger than wood-block streets, and were surprised to learn that the wood blocks were there, but hidden.

At the rear of the City Hall in Little Rock there is a great pile of old wood blocks. They have been hauled in from the damaged streets and dumped there for future reference. Many are broken and useless, but they make good fuel for the municipal traction engines and rollers, and once in a while somebody slips in and steals a load for kitchen fuel. But all the usable blocks will be put back upon the streets, after being thoroly cleaned. Formerly the work of cleaning them was an expensive task. Workmen with hatchets were kept busy hacking away the irregularities, but Mr. Donahue improvised a method that is effective and very cheap. He simply took his heating kettles and moved them out to the streets where the blocks were to be relaid, and put crude creosote into them. Then when the liquid was hot enough he set his men to work bringing up the good blocks and dumping them into the kettles. A few minutes of stirring with a stick was enough; they could be raked out and laid aside for

use. Not only did the hot bath remove all foreign matter, but it actually amounted to an additional open-tank treatment with fair penetration of the preservative.

One cannot say that wood paving has been an unqualified success in this southwestern city. Neither is it fair to condemn it. There are so many difficult conditions to deal with in this trying climate that a reasonable term of experimentation should be allowed. Then, too, it is a fact that in the actual laying of the blocks human nature played a part that has cost the city several thousands of dollars, for every engineer in the paving field knows that expansion is a thing for which allowance must be made. Certain streets have worn well. Others gave satisfaction for a few years and then went to pieces altogether. In the matters of resistance to traffic, and quiet under heavy wheels, block pavements have lived up to all claims made for them. The oldest streets have withstood the most gruelling wear. It is extremely unlikely, however, that the present city administration will recommend the purchase of blocks for new paving enterprises while the costs of lumber products remain at present levels, for other materials are more economical, in their opinion. For a city of 50,000 people the 10.7 miles now owned constitutes a fairly large representation for wood-block pavement, and it is the present plan to make the best effort possible to give this area a new lease of life.

By reason of the city organization, new paving districts are independent of the Street Commissioner until they have been financed and brought to completion, with the pavements laid. Thereafter they are supposed to endure for at least ten years, which is the usual term of working out their indebtedness. Contractors are put under five-year maintenance bonds, but between the stages of five and ten years there is often much grief for the Street Commissioner, for when streets wear out he has no choice but to try to put them back into condition for traffic. So he is between two fires; he cannot control the choice of pavements, but he must keep them passable.

Welfare Administration in Minneapolis

By Ival McPeak

Hennepin County Tuberculosis Association

POLITICAL favoritism, decentralized authority, and diffused responsibility are the defects which have usually accounted for an unsatisfactory conduct of municipal health, relief, and correctional activities. Those who have set about to remedy these shortcomings have taken lessons from the management of rubber tire factories and insurance companies. In other words, they have worked out some system of centralized control, of definite and traceable responsibilities, such as may be found in any modern business that continues to yield a profit. Of course, in delegating powers, care has to be taken to preserve democratic safeguards, to leave the road open for a final verdict from the source of power.

Minneapolis, Minn., has proposed a solution in the establishment of a Board of Public Welfare. In this Board is centralized the administration of all health, charitable, and correctional affairs—all the public welfare work of the city. Altho within a short time this plan has produced gratifying results in Minneapolis, a city of 400,000, its general adaptability to other cities seeking to revise their welfare administration will depend on several local factors. The executive welfare machine in any community has evolved through a complex of local needs, political pulls and pressures, constitutional and charter limitations.

The Former Health Administration

The present administration in Minneapolis is largely a product of several years of agitation over the work of the Health Department. Health, charitable, and correctional activities for several years were under the supervision of two executive groups, deriving their authority from two distinct sources. The Board of Charities and Corrections, appointed and presided over by the Mayor, had charge of the Relief Department, the Workhouse, and the city hospitals. The Health and Hospitals Committee, chosen by the City Council from its own membership, and the Health Commissioner, constituted the Department of Health. Regardless of individual faithful-

ness and efficiency, this division of health work between the two bodies inevitably made for unnecessary duplication of labor and expenditure. Citizens interested in community welfare, especially those who were concerned with the promotion of public health, felt that the entire welfare régime needed reorganization.

The limitations of the city's charter powers made it necessary to seek relief through the Minnesota Legislature. In 1917, a bill providing a unified welfare administration for Minneapolis failed of passage on account of its late introduction. The bill was redrafted in 1918, by a commission representing several health and social welfare agencies. Following a vigorous publicity campaign by the Hennepin County Tuberculosis Association, then a division of the local Associated Charities, the bill passed both houses and was signed by the Governor April 22, 1919. It went into effect on July 1.

The Responsibilities of the New Board and Its Committees

The Public Health Bill, as it was named, makes provision for a Board of Public Welfare in all Minnesota cities of over 50,000 population, not ruled by a home-rule charter. At present this legislation in effect applies only to Minneapolis. The new Board consists of seven members, one of whom is the Mayor, ex officio. Four of the members are appointed by the Mayor, subject to confirmation by the City Council, and the other two are aldermen chosen by the Council. The Mayor's appointees serve terms of four years, one new member being appointed each year; and the two Council representatives are elected biennially. The members of the Board serve without compensation.

In addition to their constructive outlook upon community welfare problems, members of such a board should as far as possible represent the varied professional and industrial life of the city. The personnel of the present Board consists of the Mayor, an attorney, the editor of a local labor journal, a manufacturer who is president

of the Joint Improvement Association and formerly president of the Parent-Teacher Association, a woman physician, who is a newly appointed director of the health service of the Northern Division of the Red Cross, and two aldermen, one of whom is special representative of an insurance agency, the other a physician.

This Board has complete executive supervision over the Division of Health; the city hospitals, three in number; the Division of Public Relief, which includes the Municipal Lodging House; and all penal and correctional activities. Those who favor the government of these departments by small, independent, expert boards—perhaps the best plan for the very large city—will be interested in a modification of this idea in the committee system of the Board. Four committees,—on public health, hospitals, relief and corrections,—each composed of three members chosen from the personnel of the Board, give specialized study to these phases of welfare work, and act in an advisory capacity to the Board as a whole. As an instance, not long ago the Public Health Committee decided that an expert from the United States Public Service should be engaged to take charge of the Division of Health, and, while thus acting as Health Commissioner, to make a survey of health conditions and activities in Minneapolis and recommend plans for a possible reorganization of the Division of Health. They submitted the proposal to the membership of the Board, who passed on it favorably. As a result, the city of Minneapolis is now profiting by the services of Dr. F. E. Harrington, expert epidemiologist of the United States Public Health Service, who, during his stay in Minneapolis, acts as temporary Health Commissioner. While engaged in the first two months of his study, Dr. Harrington has made especially

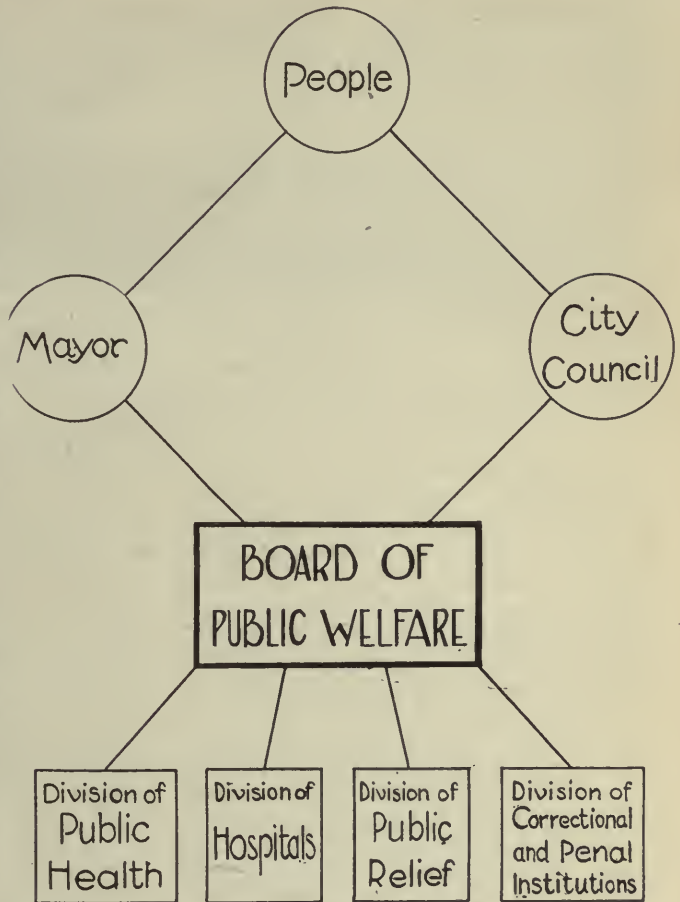


DIAGRAM SHOWING THE RESPONSIBILITY OF THE MINNEAPOLIS BOARD OF PUBLIC WELFARE

valuable recommendations for preventing the spread of contagious diseases.

The scope of two other committees, Ways and Means, and Grounds and Buildings, is indicated by their names.

Responsibility for the actual administration of the divisions of health, hospitals, relief and corrections is highly centralized by giving the Board the power of unqualified appointment of the executive heads of the four departments, and by requiring the Board to confirm all appointments made by these executives. The Health Commissioner, the Superintendent of the City Hospitals, the Superintendent of Public Relief, and the Superintendent and Physician of the Workhouse, are directly accountable to the Board, and the Board is directly accountable to the people, through their elected repre-

sentatives, the Mayor and the City Council. It feels free to seek for qualified experts wherever they can be obtained, whether inside or outside the city. The superintendency of the hospitals was recently given to Dr. Walter E. List, Assistant Superintendent of the Cincinnati General Hospital.

One phase of this centralized responsibility should be pointed out. If the Mayor's policy is indicated by a reelection, he and his appointees, during his third year and thereafter, constitute a majority of the Board. But to relieve the chief executive of undue responsibility, his appointments, as before noted, must be confirmed by the City Council.

The Powers of the Board

The Board of Public Welfare is primarily an executive body; its business is to see that the welfare ordinances of the city are enforced. It has, however, the power to make regulations to carry out the intent of the Council ordinances. The necessity for such an arrangement is especially obvious with respect to the interests of public health.

The new system has been in effect far too short a time to warrant either conclusive praise or condemnation. During these few months, however, the Board has effected several economies, injected more business-like methods into certain administrative offices, provided for a reorganization of the

Division of Health, and brought about special improvement in the hospital situation.

But chiefly to be noted is the fact that the Board of Public Welfare, by virtue of its organization and tenure, is enabled to work out, and is working out, a unified and far-reaching policy of public welfare—something that would have been difficult, if not impossible, under the former obsolete system. It is possible now because authority and responsibility have been mobilized into an effective working unit; because this governing body is largely untrammelled by political influence in engaging the service of experts; and because such a group, having oversight of the entire field of community well-being, can make equitable provision for the several welfare needs of the city.

This last consideration suggests what may be called the theoretical basis of the Minneapolis plan. The preservation of the public health, the care of the sick, the relief of the poor, and the reformation of the city's wayward and delinquent are not isolated problems. A man may be a pauper or a criminal because of a diseased body; those who look after him may well get together and talk over the case. The framers of the Minnesota Public Health Bill believe that all phases of public welfare are so intimately knit together as to call for some sort of coördinated, if not actually centralized, administration.

Pertinent Queries

1. Do you know the birth rate and the death rate in your community, and whether it compares favorably or unfavorably with that in other places?
2. Have you a welfare or health council to supplement and stimulate the work of your local health department? Has such a council made a survey of health conditions from the point of view of prevention rather than cure, and have its constructive recommendations borne fruit as seen in a higher standard of community health?
3. Do you know what diseases are most prevalent in your community and what measures are taken against them?
4. Is there good medical inspection in your schools by doctors and nurses, with follow-up work when necessary in homes? What published reports have you from these inspectors? Is your health department sufficiently financed to do this work in a thorough and efficient manner?
5. Have any of the schools in your town made provision for providing lunch—free or at a nominal price—for the children?
6. Have you adequate hospital and dispensary accommodation with ample provision for free treatment?
7. What health standards are guaranteed in your jails, insane asylums, children's homes, homes for the aged and other institutions; guaranteed for these dependent delinquents and defectives, by a society that is so largely responsible, through ignorance, indifference or neglect, for having these wards of the state dependent on its intelligent, sympathetic care and generosity?—*Canadian Public Health Journal*.



LAYOUT OF TWIN FALLS, IDAHO, PLANT SHOWING SETTLING BASINS IN FRONT OF HEAD AND FILTER HOUSE

Water-Supply Improvements at Twin Falls, Idaho

By J. E. Byers

Superintendent of Filtration Plant

THE water for the city of Twin Falls has always been supplied at the Miller dam site. The water was taken from the canal at a point about $2\frac{1}{2}$ miles from the city, and received in an earth reservoir of loose-stone revetment. Here the water was allowed several hours for sedimentation, as the reservoir has a capacity of about three million gallons. The present population of the city is 10,000.

A small chlorination plant was installed in 1916, the chlorinated water leaving the reservoir flowing by gravity to the city. During the summer months the algae growth and presence of chlorophyceae gave a disagreeable taste and odor to the water even after being treated with chlorine, and much of the color and turbidity remained, as did numbers of *B. Coli*, the greater part of the year.

In 1917, the City Council decided to construct a filtration plant, and competent consulting engineers were engaged to prepare the plans and specifications. The plant was completed in the spring of 1919, and is of the mechanical gravity type manufactured by the Pittsburgh Filter & Engineering Company. The plant is equipped with loss-of-head gages, Venturi meters, automatic control valves and dry feed machines. The water is successfully treated with alum only, and during the winter the dose is about 0.8 grains per gallon. The settling basin has a capacity of 900,000 gallons, allowing at

least a 4-hour period of detention during the season when consumption is heaviest. There are six filters, each having a normal capacity of 1,000,000 gallons and a maximum of 1,400,000 gallons. The clear well is located under the filters, and here the water is automatically chlorinated just as it enters the main to the city, to which it flows by gravity, the total head being 196 feet. It has been found that 0.18 parts per million of chlorine is sufficient to eliminate all *B. Coli* and other gas-forming organisms. Unfortunately, no typhoid data are available, but there has been no epidemic during the last few years.

A new intake was also placed in the canal, from which the water flows direct to the plant by gravity, tho an emergency pump is being installed to bring in the water when the canal is almost drained and the old reservoir must be utilized. This will be only for a short time each year, and the cost will be very small. At some future date the city expects to enlarge the old reservoir and line it with concrete, at the same time raising the walls sufficiently to allow it to carry the same elevation as the canal, which is impossible at present. This will serve as a pre-sedimentation basin as well as a storage reservoir.

The per capita daily consumption for the months of June, July and August is about 450 gallons, which is probably the highest on record of any city. This ex-



OPERATING FLOOR OF TWIN FALLS FILTER PLANT, SHOWING CONTROL TABLES AND STANDS

cessive use is due to irrigation of lawns and gardens, careless waste, and leaky plumbing, and all because the city has only a very few meters on the services. Meters are rapidly being installed, however, and services will be at least 50 per cent metered within a year, according to estimates given by J. J. Pilgerim, Superintendent of Water-Works Department. This will, undoubtedly, reduce the cost of operating the filtration plant.

REPORT OF FILTRATION PLANT FOR
DECEMBER, 1919

COST OF OPERATION

Operators (including a student assistant)	\$609.00
<i>Alum</i>	
Cost per lb.....	.0175
Freight per lb.....	.00815
Haul per lb.....	.001
Total .....	.02665
7,497 lbs. @ .02665.....	199.80

<i>Chlorine</i>	
Cost per lb.....	.145
Freight per lb.....	.090
Haul per lb.....	.01
Total .....	.245
77.3 lbs. @ .245 (average 2.5 lbs. per day)	\$18.94
<i>Coal (slack)</i>	
Cost delivered per lb.....	.00383
Average of 539 lbs. per day	
Cost per day.....	2.07
Cost per 31 days @ 2.07.....	64.17
<i>Electricity</i>	
Flat rate on 81.5 h.p. @ .75.....	61.00
K.W. charge on pumps.....	29.15
K.W. charge on lights.....	35.00
Total	125.15
<i>Miscellaneous Supplies</i>	
Including oil, lamps, gas, etc.....	5.50
Total cost for December.....	\$1,022.56
Total water metered, gallons.....	68,000,000
Average per day, gallons.....	2,200,000
Total wash water, gallons.....	1,117,000
Percentage of wash water of total.....	1.64
Cost per million gallons of filtered water	\$15.03
Cost per day.....	31.05
Cost of wash water for month.....	16.78
Cost of wash water per million of filtered water	0.246

Help the Full-Time Health Officer by Placing Him on
the Civil Service List

One of the most important steps in making a full-time health officer a real promoter in his community is to put him on civil service, with the assurance that he can remain in office as long as he fulfills his duty and to offer him a salary that will entice him to make the public health work his life mission.

New Pumping Station at Louisville, Ky.

Open-Well Caisson Method Used in Building Foundation

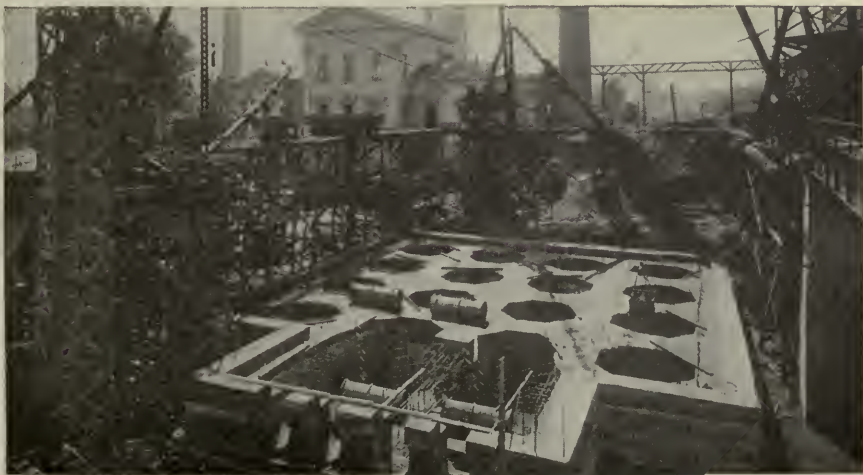
THE new pumping station for the necessary increase in Louisville's water-supply consists of a circular concrete substructure which forms a water-tight pump pit, a concrete foundation 28 feet thick built by the open-well, concrete-caisson method, and a main house of solid concrete which is faced with stone ashlar. The pumping station is located on the Ohio River, just east of the old pumping station. Since the structure had to rest on a foundation of sand and gravel which if excavated by ordinary methods might endanger the foundations of adjacent buildings, it was decided to use the open-well, caisson method of building the foundation.

The outside of the caisson is 90 feet square by 33 feet deep, with a bay on the river side 61 feet by 22 feet and 33 feet deep. In the construction of the cutting edges, the interior edges were placed 5 feet $2\frac{1}{4}$ inches above the outside cutting edges, in order to allow room for a working chamber in case any obstructions were encountered which might have compelled the conversion of the caisson from the open-well to the pneumatic type. Good fortune



INTERIOR CONSTRUCTION VIEW OF PUMP PIT,
LOUISVILLE PUMPING STATION

attended the work, however, and it was not necessary to make this change. After the dredging wells of the caisson were filled, the foundation became a solid block of concrete 90 feet square by 28 feet thick under the main house, and 51 feet by 22 feet by 16 feet thick under the bay. On this foundation the substructure of the pumping station extending to the main floor was built. This is 83 feet square at the bottom and tapers to 75 feet square at the main floor level, which is 7 feet 6 inches above high



COMPLETED FOUNDATIONS FOR LOUISVILLE, KY., PUMPING STATION



THE COMPLETED PUMPING STATION

water. The pump pit occupies the inside of this substructure, which is 67 feet in diameter.

The superstructure, or station proper, is 48 feet high to the under side of the roof. The walls between the large windows form a series of piers supporting runway girders for a 30-ton crane in addition to the roof loads. No concrete appears on the face of the superstructure. A stone facing was employed to make the new station appear as much like the old one as possible.

Your City Needs Its Health Officer All the Time

WITHIN the last few years the general public has come to realize more fully the importance of sanitation and public health protection. With this growth of the knowledge of the necessity of public health work has come a realization of the increasing need for full-time health officers. The term "full-time health officer" is applied to the health official who is not permitted to engage in other gainful occupation, but devotes his entire time to the work of protecting the health of the district, county, or city by which he is employed.

A person who has to engage in some other occupation for a livelihood and who attends to the duties incumbent upon the health officer during spare time cannot be expected to render the best service. A competent full-time official who has complete supervision of the health affairs is the best protection for the health of the public that can be obtained.

A full-time health officer has many important duties to perform. The presence of cases of communicable disease must be known before their occurrence can be controlled; hence one of the most important

duties of a health officer is to collect statistics as to the prevalence of disease, and as to births and deaths. In order to combat disease in a given community, it must be known what diseases are occurring and where such cases are located. The public must be educated as to the cause, modes of spread, and prevention of the more common preventable diseases. Special campaign direction toward the eradication of the more preventable diseases in a community requires the attention of the full-time health officer. In fact, the work of a full-time health official is very broad and can be extended and developed in many ways.

The average rural county in the United States with a population of 30,000 loses at least \$60,000 each year from preventable diseases. Would it not be more economical from the standpoint of dollars and cents, not considering the humanitarian standpoint of the saving of needless deaths and unnecessary suffering, to establish full-time health officials in all communities and thus prevent the needless waste of human lives and money?—From *Public Health*, published by the Michigan State Department of Health.

The Snow Tank a Victor in Fighting New York's Drifts

One of Last Winter's Snow Removal Methods That Proved Successful

THE succession of blizzards in February of this year left New York, as well as many other cities, practically helpless, with traffic so tied up that business relying on the transportation of goods over the streets was practically paralyzed. Numerous methods were devised for combating snow-drifts, but most of them proved to be makeshifts. Baby tanks and small tractors were seen hauling heavy motor trucks over the rough streets of downtown New York. Locomotive cranes, steam shovels, devices for throwing flame

principal sections: the conveyor, which cuts the ice and snow as the machine moves forward, and carries it to a hopper or platform at the top and rear; and the hopper with dumping apparatus, which permits the snow carried up by the conveyor to be loaded into a motor truck on either side. Two men are required to operate the machine, a chauffeur to direct it, and one helper to look after the conveyor and see to the loading of the truck from the hopper. The snow is carted by the motor truck to the nearest sewer manhole or wharf and



Copyright, Dr. Samuel Friedman, New York

HOW MANY CITIES ARE PLANNING NOW FOR NEXT WINTER'S STORMS?

Making short work of piles of snow along New York's streets last February

on snow-banks, and even bonfires, were resorted to to rid the city of snow.

At least one citizen of New York of a practical, inventive turn of mind has prepared to attack just such conditions as existed in New York throughout the month of February. Dr. Samuel Friedman has been at work for many years on a distinctly new type of snow-removing machine, on which he received a patent a short time ago. This machine resembles a tractor or an army tank. It is 25 feet long, 12 feet high and 10 feet wide. It consists of two

dumped. It is claimed that this machine would open up Fifth Avenue, New York, which carries six lines of traffic, for a distance of nearly five miles in two hours after a 6-inch snowfall. Flat cars can be loaded at the rate of 50 cubic yards a minute, a job which would ordinarily require 1,200 men with picks and shovels.

In using this machine to clear such a street as Fifth Avenue, it would probably first be run down the center of the street to clear a path 20 feet wide for the use of trucks. Then, returning, it would begin

COMPARATIVE COST OF LOADING AUTO TRUCK WITH 8 CUBIC YARDS OF SNOW AND ICE

By Hand		By Machine	
Loading—		Loading—	
8 men, 20 min., at 50 cents, minimum, per hr.	\$1.33	3 men (\$60 per 24 hrs.) filling truck in one min.	\$.04
		Gas and oil (5 gals. per hr.).....	.03
		Wear and tear (\$25 per 24 hrs.).....	.02
		Overhead (\$50 per 24 hrs.).....	.04
		Auto truck, waiting 1 min. while being loaded .....	.07
Auto truck at \$4 per hr., waiting 20 min. while being loaded	1.33		
Cost of loading	\$2.66	Cost of loading	\$.20
Auto truck carting snow and returning, average 15 min.	1.00	Auto truck carting snow and returning, average, 15 min.	1.00
Cost of loading and carting	\$3.66	Cost of loading and carting	\$1.20
Cost to city, 8 cu. yds. at 54 cents per cu. yd.	\$4.32		
Plus expansion 25% (6 yds. on ground expand to 8 yds. in the truck).....	1.08	Minus compression 50% (16 cu. yds. on ground are compressed, by force of conveyors, to 8 cu. yds.	\$.60
Actual cost to city of loading and carting 8 cu. yds.....	\$5.40	Actual cost of loading and carting 8 cu. yds.	\$.60
Piling 8 cu. yds. at 9 cents per cu. yd.....	.72	Piling 8 cu. yds. ....	.04
Total actual cost to city of piling, loading and carting 8 cu. yds.....	\$6.12	Total actual cost of piling, loading and carting 8 cu. yds.	\$.64
Difference in cost per 8 cu. yds. (\$6.12 less \$.64), \$5.48.			
Allowing 2 hrs. daily for rest, filling with gas, oiling, change of shifts, etc., there remain 22 working hrs. daily.			
The machine can fill approximately 1,300 8-cu.-yd. trucks daily. This means a saving of \$7,000 daily with one machine.			

removing the snow from the street and loading it onto a line of trucks which would use the path already cleared as a road-bed. It is estimated that about 20 trucks can satisfactorily serve this machine in taking away the snow to convenient dumps and returning to the machine to pick up another load. Five-ton trucks are loaded in less than a

minute. The "tank" loads snow from drifts up to 7 feet in height and 10 feet wide, at the rate of 50 cubic yards per minute, and ice up to 6 feet high at the rate of 25 cubic yards per minute. The accompanying table of comparative costs for loading an auto truck with 8 cubic yards of snow or ice was prepared from available data.

What Steps Are You Taking to Protect Your Shade Trees This Year?



A STREET IN DALLAS, TEXAS, LINED WITH SYCAMORES

Kingsport, an Unusual City, Built to Make Business for a Railroad

How Vision Backed by Science is Creating a Model Community in the Tennessee Mountains

By Isaac Shuman
Editor, The Kingsport Times

KINGSFORT, in the southwestern corner of Sullivan County, East Tennessee, has become a justified municipal venture in coöperation. In five years the community has grown from an agricultural village of 900 people to an industrial city of 10,000. This has been made possible by coöperation between the administrative and industrial organizations of Kingsport.

When the city of Kingsport was conceived by the owners of the Carolina, Clinchfield & Ohio Railway as an industrial town which would supply freight for that railroad, there was conceived also the idea of a town which would be attractive as a home for a varied population. And then these men, railroad builders, trained to see and to meet the needs of the future, set about building a city in which both the civic and the industrial growth would be rapid and each would keep pace with the other.

The first step was to lay out the site. Dr. John Nolen was engaged to prepare the de-

signs for the new town. He divided it into zones and set aside areas for factories and industrial plants, for wholesale trade, retail trade and residences, while other areas were laid out for parks, playgrounds, rest places, schools, churches and a Y. M. C. A. The city now numbers among its industrial plants manufactories of cement, brick, tile, soda pulp, tanning extracts, hosiery, industrial alcohol, tanned hides, leather goods, glass, dyes and acids. The housing program has kept pace with the increasing demands of a steadily growing population secured by building, through the Kingsport Improvement Corporation, various groups of dwellings in anticipation of each need.

The city was incorporated in March, 1917, under a modified form of commission government, the charter of which was drawn by expert legal talent and approved by the Bureau of Municipal Research of New York, to which the city is indebted for many valuable suggestions.

The citizens elect five aldermen every other year. The aldermen elect one of their



BROAD STREET, KINGSFORT, TENN., PAVED WITH CONCRETE AND CONNECTING THE BUSINESS AND RESIDENTIAL SECTIONS

number mayor. The board of aldermen also chooses the city manager and the city judge, but the mayor appoints the school board. Since one of the aldermen is chosen mayor, the citizens have always elected first-class men as aldermen, looking upon each one of them as a potential mayor and voting accordingly.

The Facilities of a Well-equipped City

The school system, which is carried on in a high school building and three grammar school buildings, housing a school population of nearly 1,500, is modeled after that of Gary, Ind. Each building is surrounded by four acres of ground, and there is a play teacher for small children.

The city's water is obtained seven miles away, from a reservoir protected for all times by a watershed of 1,600 acres, and is filtered through a rapid sand filtration plant. The water is furnished by the Kingsport Utilities, Inc., which also supplies all the factories and the city with power and light, and whose power rate to factories is about one cent per kilowatt hour. The city now has nearly five miles of concrete streets and about sixteen miles of sidewalk pavements. The former, built at a cost of about \$1.35 a square yard, since all the materials are obtained in Kingsport, are constructed on the assessment plan, the abutting property owners paying three-fourths

of the cost, and the city the remainder.

The Kingsport Improvement Corporation and the various industries of the city which are associated actively in promoting the town's growth have donated sites to all the churches and are now engaged in building a \$150,000 Y. M. C. A. and a community auditorium, in the enlargement of Kingsport's program for social welfare.

All the industrial plants and the municipality have joined in presenting to each of their employes life, accident and health insurance to supplement the workmen's compensation insurance carried by all, taking the group policy with the Metropolitan Life Insurance Company. The latter has since joined the city in promoting the welfare of Kingsport by establishing a health center and nursing service not only for the persons insured by its policies, but for the whole city, and is supplementing this work by a sanitation program which is expected to make Kingsport a "spotless town."

Homes for the People

The Kingsport housing program, conducted by the Kingsport Improvement Corporation, which is intended to relieve any possible housing shortage not met by individual construction, has resulted in the construction of several groups of houses. All these houses are constructed in the best possible manner compatible with their class.



GROUP OF HOUSES IN KINGSFORT, EACH CONTAINING SIX ROOMS AND BATH, WITH FURNACE

Note the character of the sidewalks and the street, as well as the planting. In the distance can be seen Bays Mountain, the source of Kingsport's water-supply



HOME OF THE FIRE DEPARTMENT OF KINGSFORT, TENN., WITH QUARTERS FOR THE FIRE CHIEF AND DORMITORY FOR MEN OF THE DEPARTMENT

The policy is that every house, both large and small, shall have modern conveniences such as running water, bathroom, electric lights, etc.

One thousand houses are planned for the immediate future, to meet the demands expected by the growth of the factories already located here and others just beginning their construction, among them large glass and leather goods manufacturing industries, employing in the aggregate 1,500 persons. Each of these houses is sold on easy terms by the Improvement Corporation at cost plus the nominal price of the lot on which it is built.

Just now the Improvement Corporation is engaged in the construction of a golf course as a further aid to community recreation, and has employed a landscape

architect to beautify the city, the service of the latter being free to any resident of the city.

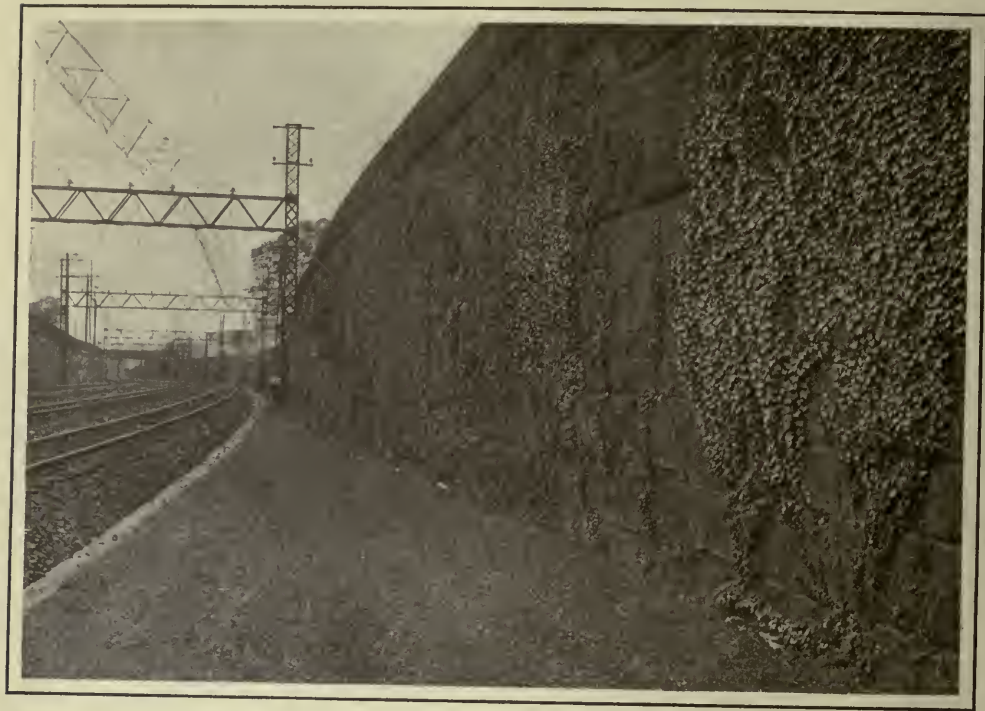
The initial factor in Kingsport's growth is its location in the center of a region whose resources provide cheap coal and power, and raw materials for a great diversity of industries. The climate is equable. The terrain is suitable for a city. Its altitude is about 1,300 feet above sea level. The territory immediately contiguous to Kingsport is well adapted for agricultural purposes, a factor contributing largely to the success of the community. The population is almost entirely native Anglo-Saxon—Americans. The conditions were almost ideal for city-building, and by coöperation and coördination of effort Kingsport has laid the foundation of a city of 50,000.

A Good Citizen

"A good citizen is one who is willing at all times to make some sacrifice of his time, means and convenience to advance the common welfare, and has such an abiding interest in this that he is always watchful and needs no urging to do his duty."—Ex-Governor Judson A. Harmon, Ohio.

Beautifying the Approaches to a City

The New York, New Haven and Hartford Railroad Cut, Through
Mount Vernon, N. Y.



Paving New Residential Streets in Phoenix, Arizona

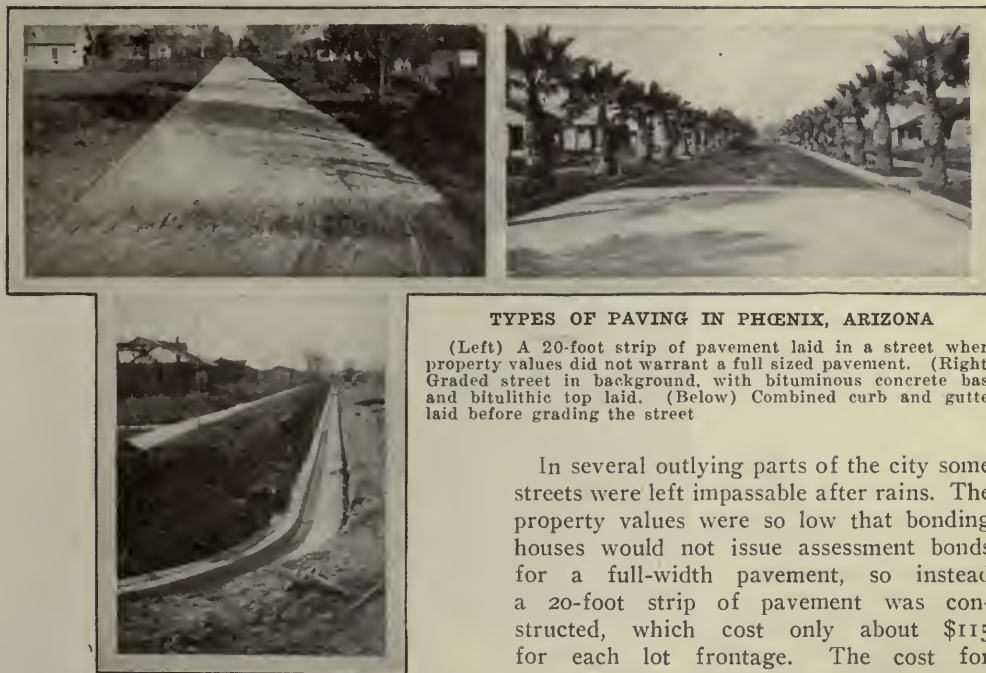
By A. E. Gregory

THE Engineering Department of the city of Phoenix, Ariz., is at present laying pavement at the rate of about 20,000 square yards a month. This will be increased later, so that at least 300,000 square yards will be constructed during 1920. The work is being done by a contracting firm and is under the supervision of the City Engineer, L. B. Hitchcock.

There are 104 miles of streets in Phoenix. Up to April, 1919, 18 miles had been paved, at a cost of \$1,060,634. Since that time

paving, without regard for the high cost of materials and labor, which has increased the price of a square yard plus incidentals to about \$3.

In residence districts and boulevards the pavement consists of a 2½-inch bituminous concrete base and a 1½-inch bitulithic top. In the business section where traffic is the heaviest a 5-inch cement concrete base is used with a 2-inch bitulithic top. For all purposes it has been found that a bitulithic top is the most satisfactory.



TYPES OF PAVING IN PHOENIX, ARIZONA

(Left) A 20-foot strip of pavement laid in a street where property values did not warrant a full sized pavement. (Right) Graded street in background, with bituminous concrete base and bitulithic top laid. (Below) Combined curb and gutter laid before grading the street

contracts have been awarded and construction has been under way for 12 miles of paving, which will cost nearly one million dollars.

Last year 600 acres were added to the city, increasing the total acreage to 3,255. Most of this is in the northern part, which is the principal residence district. Hundreds of homes are being built there so rapidly that Phoenix is taking on the appearance of a brand-new city. The owners of the lots have petitioned for immediate

In several outlying parts of the city some streets were left impassable after rains. The property values were so low that bonding houses would not issue assessment bonds for a full-width pavement, so instead a 20-foot strip of pavement was constructed, which cost only about \$115 for each lot frontage. The cost for the full-width pavement is nearly \$350 for each lot frontage. Later an additional 7 feet with curbs and gutters will be laid on each side. At present ditches along the sides serve to carry off storm water.

This type of paving is an experiment. It does not look bad in a street that is not more than 60 feet between property lines. The sidewalk and parking on each side takes up about 12½ feet, leaving a dirt strip of 7 feet on each side of the pavement. Driveways are put in and graded for those who wish them.

A New Way to Control Traffic on Congested City Streets

By W. T. Perry

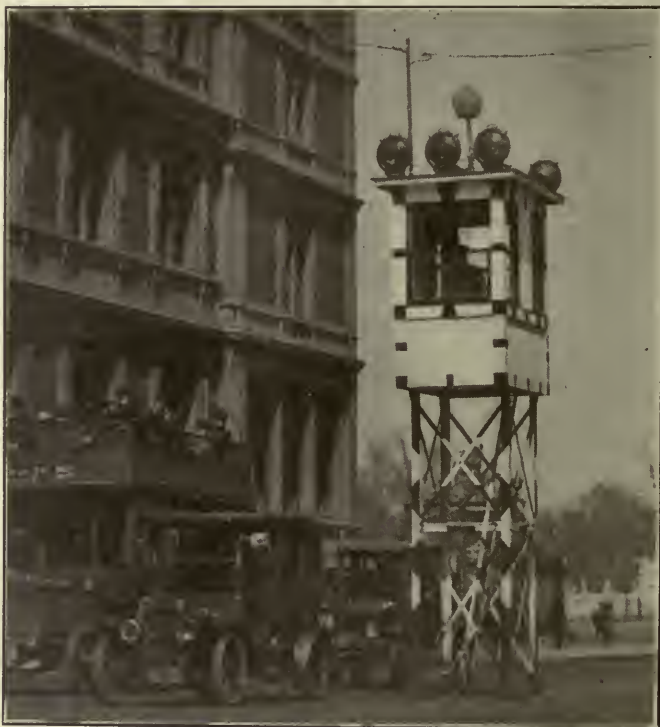
ONLY one-and-a-half of the seven miles of Fifth Avenue, New York, is really over-crowded. But the condition of traffic on these thirty blocks cannot be described as merely "crowded"; twice a day, in the morning and evening it is jammed. The installation of police at the cross-streets to control traffic with hand-worked semaphores did not entirely solve the problem, because each officer worked independently, with the result that some blocks were crowded while others were empty of traffic.

New signal towers have been built directly in the middle of the avenue, and they are expected to make up in efficiency what they lack by way of being ornamental. Each of these five towers in the crowded zone is surmounted by three sets of powerful electric lights which are 18 feet above the street surface. So powerful are they that they can be seen at a distance on the sunniest day. They consist of an orange light flanked by a red and a green.

When the orange light is burning, all traffic on the avenue moves and traffic from the cross-streets must stop. When the green signal is flashed, the reverse is true. Just before the signals are changed, the red lamp warns drivers that the signals are about to turn and gives them an opportunity to avoid collision by stopping too suddenly or being brought to a stop across the intersection of streets and

thus blocking the way. The red lamp is used also as an emergency signal, and when it is shown alone all traffic must stop. The emergency signal is used at the approach of fire apparatus, ambulances and police patrol wagons or for any other reason which necessitates the stopping of all vehicles.

The towers are connected with each other



ONE OF THE TRAFFIC SIGNAL TOWERS ON FIFTH AVENUE, NEW YORK

by electric signals and telephones so that each tower flashes the same signal at the same time the entire mile-and-a-half of the avenue. In this way traffic moves or stops as one vehicle. At cross-streets between the towers are stationed traffic police with hand-worked semaphores, who observe the tower signals and follow them.

Forward Steps

Reported to **THE AMERICAN CITY**

by **Municipal Officials & Department Heads**

City Managers

"Spring Reminders"

WINNETKA, ILL.—A little triple folder has just been issued, entitled "Spring Reminders from the Village of Winnetka," and described on its first page as "Being a Statement of Ordinances providing for Your Welfare and the Maintenance of the Village as an Attractive Home Community." This has been sent out to the citizens of Winnetka in general with the idea of helping them to get ready for a spring and a summer that will prove a benefit to the entire community.

The Athenian Oath is printed on the first inside page, and on the other pages appear the following paragraphs of important information:

1. Indiscriminate picking of flowers and mutilation of trees and shrubs by automobilists and others is prohibited by Village ordinance.

Coöperate by calling the Police Department when violations are observed.

2. Do not plant shrubbery on parkways. They are public property and under Village control.

Parkway shrubbery tends to increase automobile accidents.

3. Private shrubbery and trees should not be allowed to extend over the sidewalk so as to obstruct traffic.

Now is the time to trim them back.

4. Private shrubbery at street corners should be kept low so that view of cross street auto traffic is not obscured.

5. Call the Village Forester (Winnetka 1294) if you believe the parkway trees in front of your property need attention.

If you wish to plant trees in the parkway he will issue permit and will render all possible assistance.

Trimming or removal of trees on parkways, without a permit from the Village Forester, is strictly prohibited.

Do not engage a so-called "tree-expert" without consulting the Village Forester. He has a list of competent men and firms. Irrepar-

able damage has been done by incompetent "experts."

6. Economize by making necessary sidewalk repairs promptly.

The Superintendent of Public Works will be glad to give information and advice.

7. Driving across curbs, sidewalks or parkways without a permit providing for proper protection is strictly prohibited.

Permanent driveways must be built under supervision of Public Works Department, under permit.

8. A building permit must be secured before starting construction of all buildings or building alterations.

This includes private garages.

9. Don't dump rubbish on vacant lots.

Your Village will collect it *free of charge*, if you will call Winnetka 860.

10. Coöperate with the Fire Chief by cleaning up rubbish accumulations in the basement and attic.

Fires are spectacular but expensive, both to you and to the Village.

11. Learn the provisions of the new "Illinois Motor Vehicle Law."

Remember that the Police Department is in duty bound to impartially enforce these regulations which are made for your protection. A copy of the Vehicle Law can be secured by addressing the Secretary of State.

12. The Village Manager's telephone number is Winnetka 54.

Constructive suggestions for improvements in Village service and conditions will be cheerfully received.

H. S. WOOLHISER,
Business Manager.

City Engineers

Efficient Management of Street Department

RICHMOND, IND.—In 1917, the Board of Public Works in Richmond gave the City Civil Engineer general supervision of the street department. Since then this department has been elevated from the "slough of political despond" to a systematic business basis. The city owns a fair

amount of equipment, much of which had previously enjoyed little care and housing during the winter months. The maintenance of this equipment also had been of a low order, although considerable money had been annually spent for its repair.

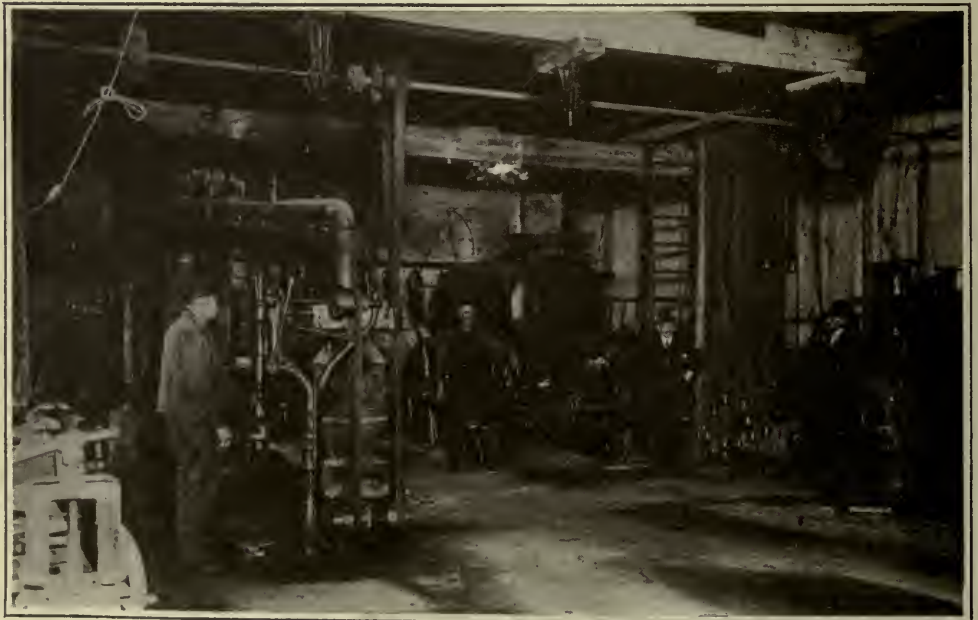
On taking charge of the street department, adequate housing facilities for all the equipment and also space for a repair shop were first sought. A suitable location was found in portions of a vacant electric power house, which, although belonging to the city, was being used only for junk and rubbish. This building was cleaned and space partitioned off for storing all the city's equipment in one part, and in the other section a city repair shop was fitted out. The fittings for this shop were secured from a machine shop which was selling out at the time. A large forge, an anvil, a drill press, an emery and vises, together with a full set of blacksmith's tools, were purchased for less than \$150. A 5-horse-power electric motor driving a line shaft furnishes the necessary power. A hose rack, on which the fire hose used for flushing sewers is hung, is located in close proximity to a large cannon stove. Every machine and every tool belonging to the city is kept in this building, so every teamster knows to what place to return equipment taken out.

On rainy days during the summer season and throughout the winter months the few important employes are kept busy in the shop, making all necessary repairs. This past winter all the equipment was completely overhauled, worn parts renewed and thoroly cleaned and painted. These few skilled employes are paid on a straight time basis, so work done by them in the shop in bad weather represents that much saved for the city. Remarkable results have been attained. Equipment previously relegated to the junk heap for want of minor repairs has been made like new. As an example, a discarded Troy dump wagon was repaired and repainted and recently sold for \$99; a Studebaker rotary sweeper eighteen years old is now as good as new and is used every day to sweep our pavements. This sweeper is said to be the oldest Studebaker rotary sweeper in active use.

D. B. DAVIS,
City Civil Engineer.

Cutting a Hill Out of the Heart of a City

SAN FRANCISCO, CAL.—The industrial development and expansion of any community depends upon its having land available to transportation. Every foot of such land must be utilized to its maximum possibility.



CITY REPAIR SHOP, RICHMOND, IND.



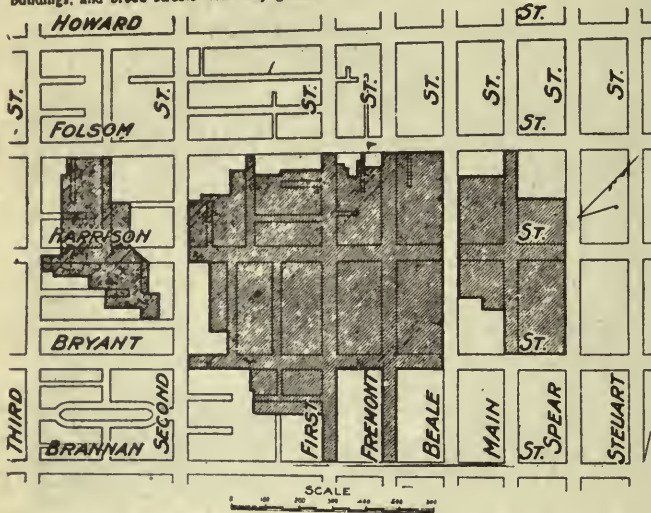
CORNER OF FIRST AND BRYANT STREETS, SAN FRANCISCO, SHOWING THAT PART OF RINCON HILL THAT ADJOINS THE WATER-FRONT
Shacks occupy the top, and paper warehouses are below. The property on top of the hill is valued at less than \$1 per square foot



HARRISON STREET AT SECOND STREET, SAN FRANCISCO, SHOWING THE HIGH-CLASS TYPE OF BUILDINGS THAT ADJOIN THE BASE OF RINCON HILL

RINCON HILL DISTRICT MAP

The map shows the proposed regrade district for the Rincon Hill project. The district contains 64 acres and will prove one of the most important commercial centers of the city if the proposed idea of cutting down the hill is carried out. The plan will allow of a network of tracks covering the area, additional street car transportation, solid ground for the erection of modern industrial buildings, and broad streets with easy grades.



The industrial life of a modern city, such as San Francisco, is so complex that no section or portion of its business area can suffer without the effects of this being felt throughout the whole city.

The Rincon Hill district of San Francisco has been a barrier retarding such development, and definite steps are now being taken to remove it. It stands as a bar separating a large section of the waterfront from the commercial and manufacturing district. Moreover, the area covered by the hill is now occupied with practically waste land. It is not fit for anything but buildings of a second-class character for residential purposes, and renders the very heart of one of the richest districts in the city almost useless. It adjoins the wholesale and retail districts of the city, and it is necessary to take goods to and from the docks by a roundabout way in order to get past the hill. Time and money are thus lost in transporting these commodities.

With the cutting down of the hill there will be easy gradients and broad streets. The maximum grade as planned will not be over $3\frac{1}{2}$ per cent in the main district. The maximum existing grade is 12.8 per cent. The streets will be paved with the latest-type pavement, capable of carrying the

heaviest loads, and will replace the present steep, poorly paved thoroughfares.

A network of industrial tracks is to be run through the district when the hill is razed. Access will be given to manufacturing, warehouse and wholesale houses, with direct connection with the waterfront wharves. The district will be all on solid ground, and new buildings—which will be erected as a matter of course—will be erected with low foundation costs, which is a big item. There will be no piling necessary for buildings in this district.

The advantages of the proposed plan to level the hill are convincingly shown in the accompanying

illustration. Second Street penetrates the heart of the proposed regrade and is lined with fine modern business structures, in striking contrast with the buildings to be found in other portions of the district, which are practically inaccessible for commercial purposes.

The Board of Supervisors during the past year has approved a change of grade ordinance which will facilitate the procedure of this project. In addition to providing for change of grade, the ordinance provides for recommendations by the City Engineer as to side slopes upon abutting properties. The City Engineer is now compiling the necessary data covering all phases of the regrade preliminary to making his recommendations to the Board of Supervisors, and is also preparing an assessment district that will help defray the cost of the project. Surveys of the entire district have been made, and every lot and improvement has been located with reference to the regrade.

There are 15 regular city blocks affected, involving 309 parcels of land, covering an area including streets of approximately 85 acres. The greatest cut is 89 feet, and there will be a total of 3,000,000 cubic yards of soft rock and clay to be removed. The best available dump that would derive a

maximum of benefit from this material, and for which payment would most likely be made, is known as the Islais Creek District, situated about 3 or $3\frac{1}{2}$ miles south of Rincon Hill, and consists of 800 acres of tide-lands on the San Francisco Bay shore. This section lies in the path of San Francisco Harbor development and directly adjoins areas that are now being developed by the California State Harbor Commission. Excellent transportation facilities connect the regrade district with the Islais Creek District.

It will take about 18 months to accomplish this work, with an expenditure of $3\frac{1}{2}$ to 4 millions of dollars. At this time land on top of the hill is worth less than \$1 per square foot, while at the foot, where industries are gradually nibbling into it by necessity, land is worth up to \$4 per square foot. The assessed value of the real estate within the regrade district is approximately \$1,000,000, and the assessed value of the improvements \$250,000. Fortunately, with one or two exceptions, the more permanent and costly type of structures are around the base of the regrade, and beyond underpinning and extension of footings will not be seriously affected.

M. M. O'SHAUGHNESSY,
City Engineer.

Finance Departments

Spokane's Municipal Fish Market

SPOKANE, WASH.—Much interest attaches to the operation of the municipal fish market in Spokane, Wash., which has recently concluded a successful year. Spokane, being inland, does not profit by the opportunity for consumers to come into direct touch with fishermen, that obtains in seaboard communities. With the object of making fish food available for residents at a minimum cost for handling, the city market idea was originated by Mayor Charles A. Fleming, during his régime as Commissioner of Public Affairs. An initial budget of \$10,000 was appropriated by the City Council, and when the Commissioner assumed the mayoralty and turned his department over to a successor the assets were \$12,151. The market was not run for profit, only a sufficient margin being added to protect it from loss. In 1919, the municipal fish market transacted business aggregating \$25,338.93, at a profit of \$826.27.



A BUSY DAY AT THE FISH MARKET OPERATED BY THE PUBLIC AFFAIRS DEPARTMENT OF THE CITY OF SPOKANE

Overhead in 1919, consisted of rent, salaries \$2,428.50, and depreciation \$16.94.

The principal object was to trade in fish, but from time to time, as opportunity presented, other trades were put through. Sales of beans and chickens were made during the year. The principal article of fish handled was salmon, which was sold at or about 10 cents per pound.

C. T. BOGART,
Purchasing Agent.

Public Welfare Departments

A City Employment Bureau for Women

BAKERSFIELD, CALIF.—It is a satisfaction to be able to carry on so helpful a city institution as the Employment Bureau which has been maintained by the Charity Department of Bakersfield since October 1, 1919. The work is for women, and its object is to make people independent of charity. In this way it is of service to the entire community. In many cases it is necessary for the department to provide for the family of the applicant until work can be secured and enough money is saved to give them a good start and enable them to pay their own bills. Even an unfit family, if it has nothing in the house to eat, must be fed. Then we get the confidence of the members of the household and can teach

them to be clean and to manage the home and the children properly.

There are more demands for houseworkers than the Bureau can fill. The women whom we help are not the kind to seek charity, and their pride in becoming self-supporting is a great part of the only compensation the Bureau receives. Up to February 15, 107 people were given employment this year through our efforts. They are filling their positions satisfactorily and relieving the city of a burden that might otherwise become heavy.

MRS. EFFIE STEWART,
City Charity Commissioner and Employment Agent.

Park Departments

For Bird Lovers in a City Park

SAN DIEGO, CALIF.—That an aviary is a necessary feature of a public park which would best serve the community has been well demonstrated in the city of San Diego, for in this sunny clime every day in the year brings out the lovers of birds, who sit and watch the many varieties within the enclosures.

The aviary in Balboa Park, constructed by the Park Department at a cost of about \$3,500, was designed by Carleton Monroe Winslow, one of the architects whose work



AVIARY IN BALBOA PARK, SAN DIEGO, CALIF.

helped to make the San Diego Exposition of 1915-16-17 such a great success.

The main portion of the aviary, which is set back about 50 feet from the street which borders the park on the west side, is 40 feet wide by 90 feet long. The walls are of interlocking tile, 12 feet high, and surmounted by a barrel-vaulted cage of steel ribs and heavy wire mesh. The structure is divided into two large and two small cages and is bordered along its east side by a rose-covered pergola, making a pleasant place for observation. The west side consists of a tile-roofed shelter for the birds, opening immediately into the flying cages, and furnished with nests in the form of quaint little houses and rustic boxes.

At the corners of the aviary are arched pavilions for the shelter of the public, and small windows in the west wall tend to break the plainness of that elevation.

The appearance of the building is much enhanced by the adjacent planting of trees, shrubs and flowers. The general color of the aviary is the natural red of the tile walls and roof, set in red mortar, thus harmonizing with the surrounding planting.

JOHN G. MORLEY,
Superintendent of Parks.

Recreation Departments

Publicity for a City's Playgrounds

OAKLAND, CAL.—The Recreation Department of the city of Oakland issues a Bulletin which has been the means of increasing public interest in what this municipality is doing for the outdoor life of the people. This quarto folder is published for the purpose of keeping the taxpayers in close touch with the manner in which the department

budget is expended, to call attention to the facilities for recreation offered, and to afford to other cities a means of comparing the work of similar departments with the growth of the recreational movement in Oakland.

Besides being incorporated in the annual edition of a local paper, the Bulletin is mailed to interested citizens, to recreation departments in all the larger cities, and to publications interested in the playground movement and municipal improvements. The Bulletin has elicited letters of inquiry from many sources, particularly in regard to the coördination of schools and playgrounds. This system has worked out with untold benefit to the public in Oakland, and a number of eastern cities have requested that copies of the Bulletin be sent to boards of education to call attention to this particular phase of our playground work.

The 1919 issue of the Bulletin contains the following material: comment from the minutes of the Eleventh Annual Conference on City Planning on "the tying up of the school and the playground" in Oakland and a statistical summary of this coöperation; "Recreation a Substitute for the Saloon," with a table showing the popularity of various competitive games; "Returning Soldiers Want Recreation"; a tribute to the liberality of the City Council; "Department 100% in War Work"; a number of columns describing the various features of athletics offered by the department and their popularity and influence; a statement of miscellaneous activities—picnics, club entertainments, parties, etc.; a detailed announcement of the facilities offered for sport and entertainment at Lake Merritt; and—by no means the least appreciated feature of the publication—a number of very attractive pictures of good times in the Oakland playgrounds.

JAY B. NASH,
Superintendent of Recreation Department.

An Error Corrected

We are indebted to Frederick N. Evans, Head of the Division of Landscape Gardening of the University of Illinois, for calling our attention to an error in the opening sentence on page 268 of the March issue of *THE AMERICAN CITY*. This sentence, in an article on "Trees for the Streets of

Cities and Towns," should have read, "Nursery-grown trees should be used for street planting." The Editors regret that a typographical error should have negated this statement. The remainder of the paragraph, however, made it clear that nursery-grown trees were recommended.

"No Parking of Autos"

By G. Gordon Whitnall

Secretary, Annexation and Consolidation Commission of the City of Los Angeles

LOS ANGELES has taken the bull by the horns. Traffic congestion in the down-town district had become such an acute problem that the result was akin to stagnation. Not only did the business district present an almost impenetrable barrier to motor vehicles, but the blockades thus caused played havoc with all street car schedules to such an extent that the service on all lines entering the metropolitan district became demoralized. This was particularly the case during the rush period of late afternoon. Cars became uniformly overloaded, and yet more cars only added to the problem, as it was wholly a question of getting the cars through the blockade.

At the same time the question of insufficient revenues became a problem with the Street Railway, which petitioned the State Railroad Commission to be permitted a raise in rates or to be afforded some relief that would reduce operating costs. As much of the burdensome cost of operation was represented in the "reserve" service for rush periods, and this reserve was made larger by reason of the "dead" service due to congestion, the problem of street car revenues became linked up with the problem of street congestion in general.

A third element with a very direct effect upon the general situation was the factor of available street space. From a survey recently made, it was found that of all the cities comparable with Los Angeles, there was only one—Columbus, Ohio—that had a smaller percentage of street area as compared to built-up area in the down-town section. Added to this was the fact that Los Angeles has the largest per capita ownership of motor vehicles of any large city. The situation from this standpoint alone became acute. With the other two elements added, it presented a condition that demanded some radical treatment.

Upon the recommendation of the State Railroad Commission and the Board of Public Utilities of the City of Los Angeles, the City Council enacted into law the "No Parking" ordinance. Under the terms of

this ordinance parking of autos in the down-town district is entirely prohibited. Two minutes is allowed for passengers to enter or leave vehicles from the curb. Commercial deliveries are permitted fifteen minutes. These provisions apply between the hours of 11 A. M. and 6:15 P. M. Surrounding this completely restricted district, which is about a mile long and a half-mile wide, there is a second zone within which parking is allowed for a maximum period of two hours. Before and after the hours of limitation and on Sundays parking is permitted.

This ordinance went into force on April 10. The immediate effect was to produce the appearance of desertion on the down-town streets during the busiest hours of the day. A perceptible improvement in street car service was apparent and expressions of pleasure from car crews were common. Proprietors of retail establishments within the restricted zone are about evenly divided in their opinions concerning the effect on business. Probably no authentic check on the true effect can be expected for a month.

Automobile interests are of course displeased and have already taken the matter to the courts in a test case. In the meantime there is a growing conviction that the trouble lies principally in the physical features of Los Angeles, which are accentuated by the topography and geography of the city. No permanent relief is in sight short of extensive city planning work, and this is now being provided for through a newly created City Planning Commission.

Local city planners have quite generally expressed the idea that the motor vehicle is the expression of a new form of transportation that has many economic advantages over previous forms, notably the street car, and that legislation restricting its utility can have but one of two effects, either to retard the general development of those portions of the community affected, or to cause a spreading out of the commercial district of the city into sub-centers well distributed through the city.

Modern Methods of Sewage Disposal

An Illustrated Delineation for Municipal Officials

PART II

By E. S. Chase

Sanitary Engineer

Sludge Disposal

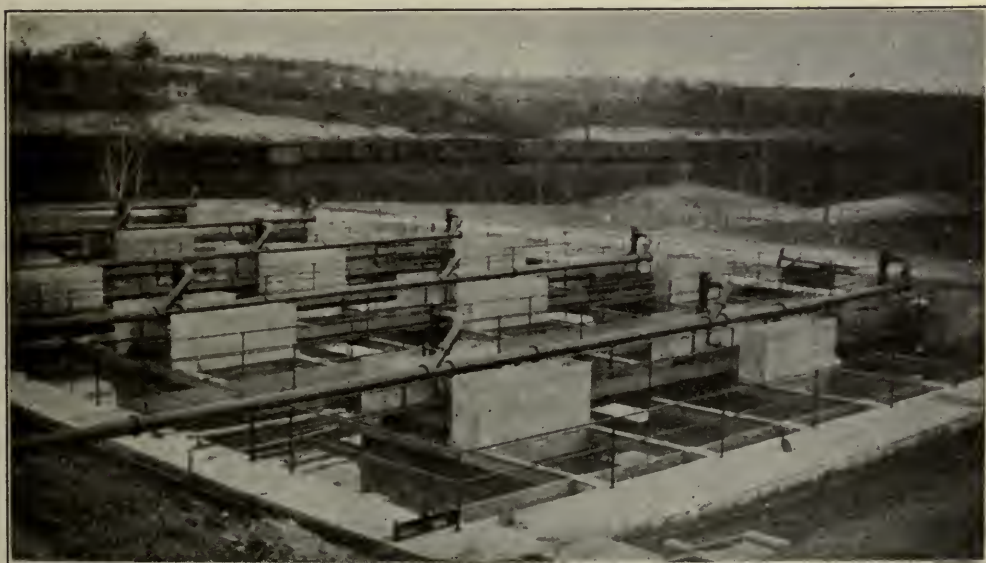
The problem of the treatment and disposal of the sludge removed by the various types of tanks still remains partially unsolved. Sewage sludge, even under the best of conditions, contains large amounts of putrescible organic matter together with a high per cent of moisture. Preliminary treatment of the sludge takes place in the tank because of the action of the bacteria upon the organic matter, but the removal of the moisture from it must take place outside the tank. The quantity of moisture in sludge depends upon varying conditions and upon the type of tank. Sludge from deep tanks contains less moisture than that from shallow tanks. Imhoff tank sludge has a smaller amount of moisture than that from plain settling or septic tanks. Roughly, Imhoff sludge will contain 75 to 80 per cent moisture, whereas plain tank sludge will contain 90 to 95 per cent moisture.

For the drying of the sludge various

methods have been used. In the case of sludge from chemical precipitation tanks, filter pressing is resorted to, more lime being added to the sludge to thicken it and to make it more easy to handle. Filter pressing can also be used in connection with sludge from other types of tanks, but such sludge requires the addition of larger amounts of lime. The sludge-cake produced by pressing may be used for filling in low areas or as a low-grade fertilizer. Sludge pressing requires costly equipment and is expensive of operation.

The more common method of sludge treatment is to run it upon underdrained sand beds and then to allow the moisture to seep away. After drying, the sludge can be removed and disposed of by filling in or as fertilizer. Other methods of sludge disposal are lagooning, trenching and discharge into streams at times of heavy run-off. Centrifugal machines also have been used abroad for dewatering sludge.

In "Les Misérables," Victor Hugo de-



TYPICAL AMERICAN IMHOFF TANK INSTALLATION, FITCHBURG, MASS.



Courtesy A. I. Howd

**REMOVING IMHOFF TANK SLUDGE FROM SLUDGE DRYING BEDS,
SCHENECTADY, N. Y.**

votes an entire chapter to the apparent economic waste of the fertilizer constituents of sewage. While sewage undoubtedly contains considerable fertilizer value, there is so much dilution with water, even in the concentrated sludge, that the cost of recovery overbalances the value obtained. Furthermore, the availability of the fertilizer constituents is minimized by the fats and grease present in the sludge. At present the principal effort in sludge disposal is to produce an inoffensive material at the lowest possible cost.

Broad Irrigation

Probably the earliest method adopted on a large scale for the purification of sewage was that of applying it to level areas of land and allowing the soil to absorb and purify the sewage. In order to utilize the manurial value of the sewage, the land thus treated was farmed. This method requires large areas of land (one acre for each 10,000 gallons of sewage per day), gives rise to nuisance from flies and odors, and, on the whole, is more costly than modern methods. The soil must be porous and easily drained, and the location must be remote from habitations. The financial return from the sale of crops is not as great as might be expected, and the method has gone out of use except in a few instances.

Intermittent Sand Filtration

A decided advance over broad irrigation resulted from the development of the intermittent sand filter. This filter comprises a

bed of sand or fine gravel 2 to 4 feet in depth, well underdrained by lines of tile laid with open joints. The sewage is applied evenly to the surface of the bed in doses taking place one to three times daily. The sewage thus applied percolates through the sand, and the effluent is collected by means of the underdrains.

Bacteria and other micro-organisms form a gelatinous coating on the surfaces of the sand grains, and in conjunction with the air present oxidize the organic matters.

The sand also effects a mechanical straining out of suspended solids. It is essential with filters of this type for the sewage to be applied intermittently in order that air, necessary for the oxidation process, may be admitted into the voids of the sand. Excellent results are obtained with intermittent filtration; the effluents from a properly operated filter will be practically clear and colorless and non-putrescible, with a large proportion of bacteria removed. Comparatively large areas are necessary, however, one acre being required for about 50,000 gallons of sewage per day. Operating costs are also fairly high. For large plants, this type of treatment is no longer adopted, altho where the quantities of sewage to be treated are small, and where a high degree of purification is required, intermittent filtration is extremely valuable.

Coarse-Grain Filters

Early experiments carried on by the Massachusetts Board of Health with sewage filtration through coarse gravel resulted in larger-scale investigations in England, which developed two forms of filters of coarse material, the contact bed and the sprinkling or trickling filter.

Contact Bed

The contact bed is a tank filled with broken stone to a depth of 4 or 5 feet, the bottom being underdrained, and devices being provided for the intermittent discharge of the sewage into the bed. The method of operation is to fill the bed with settled sew-

age, allow the bed to stay full for a period not exceeding one hour, drain fairly rapidly, and then allow the bed to remain empty for a few hours. A complete cycle of operation usually consumes about 8 hours, and three or more units are required.

When the bed is filled with sewage, deposition of solid matters takes place upon the surface of the stone. As the bed is drained, air enters the voids and, aided by the micro-organic films on the stones, oxidizes the organic matter left behind in the bed. In order to obtain well-oxidized and stable effluents, it is frequently necessary for the sewage to be applied to two or more beds in series.

The relatively large size of the material used for contact beds permits much larger amounts of sewage to be treated on the same area than in the case of intermittent filtration. In time, however, the voids of the stones become clogged and it is necessary to renew the material. Contact beds can be operated at rates as high as 500,000 gallons per acre per day, or ten times the rate of intermittent filtration. The cost of operation is also much less. The effluents from carefully operated contact beds are usually non-putrescible and inoffensive, but are rather turbid and high in bacteria.

A modification of the contact bed is the slate bed devised by Dibdin of England. This consists of a tank filled with slate in such a way as to form a sort of honeycomb with a large percentage of voids. The operation of this bed is similar to that of the contact bed. None has been constructed in this country except for experimental purposes.

Sprinkling Filters

A sprinkling filter is primarily a bed of broken stone, 4 to 8 feet in depth, laid on a concrete floor, this floor being covered with a system of underdrains for the rapid removal of the effluent and for ventilation. Settled sewage is applied to the surface of the filter in the form of fine spray through systematically

spaced spray nozzles, these nozzles being connected by means of a distribution system of piping with some form of automatic dosing apparatus. In Europe in many cases more elaborate mechanical devices are employed to distribute the sewage upon the filters. Where spray nozzles are used, it is generally customary to discharge the sewage through them under varying pressure so as to secure as uniform distribution as possible. The sewage is applied intermittently, application taking place for 3 to 5 minutes, followed by a rest period about twice as long. The periods vary, of course, with different installations. As the sewage is sprayed through the air it absorbs oxygen, and as the aerated sewage passes down through the filter media the biological film on the media utilizes this dissolved oxygen to oxidize and mineralize the organic matter. The purification takes place very rapidly, as only a few minutes elapse between the time the sewage is applied and the time it leaves the effluent channels.

On account of the practically continuous application of sewage and the ever-present supply of oxygen in the applied sewage and within the interstices of the media, sprinkling filters may be operated at high rates, ranging from one to three million gallons per acre daily. The odor from sprinkling filters is not pronounced, provided the sewage applied is fresh and non-



A TRICKLING FILTER UNDER CONSTRUCTION AT READING, PA., SHOWING THE HALF-ROUND TILE UNDERDRAINS, THE RISERS FOR SPRINKLER NOZZLES AND THE FILTER MEDIA

septic. In summer, myriads of moth flies breed in the filters and become a great nuisance, altho fortunately they do not fly far. The sprinkling filter effluent is turbid, brownish, non-putrescible, and with many less bacteria than in the applied sewage.

A material improvement in the quality of the effluent can be effected by final sedimentation. This final settling is particularly valuable for the removal of the solids which periodically flush out from the filter material. It is this periodical flushing out of accumulated solids which renders it unnecessary to clean or renew the filter material. On the whole, the sprinkling filter furnishes about the most satisfactory and economical means to date for the oxidating of considerable quantities of sewage by artificial means.

Activated Sludge Process

In the last five or six years the activated sludge process has been receiving the careful attention of sanitary engineers. This process consists essentially in forcing large quantities of air in fine bubbles through the sewage as it flows through a tank having a detention period of a few hours. After this aeration the sewage flows into a settling tank for the removal of sludge. Of the sludge deposited, a portion is withdrawn to a sludge aerating tank for further aeration before being returned to the first tank receiving sewage. The sludge thus formed and "activated" contains various micro-organisms similar to the biological film formed on the media of filters. The activated sludge passing through raw sewage

acts both to absorb and coagulate suspended solids and oxidize the organic matter.

This process requires a comparatively small amount of area, the first cost is relatively low, and the rapidity of the process prevents septicization. Somewhat more elaborate machinery is necessary than in the older processes, and very careful operation. The principal difficulty is the disposal of the sludge, which contains a high percentage of moisture, around 98 per cent, and which is consequently very bulky. Experiments have indicated that with the addition of chemicals or acids the sludge may be thickened so that filter pressing may be resorted to successfully.

The effluent is clear, sparkling, colorless and with a high per cent of the bacteria removed from the raw sewage. The sludge is handled rapidly before putrefaction sets in, is comparatively inoffensive, and is considered to have potential worth for fertilizer.

Sterilization

None of the processes of sewage treatment completely destroy the bacteria present in the sewage. Intermittent filtration produces the best effluents, but even these are far from sterile. Under some conditions, such as cases where water-supplies or shell-fish beds are involved, it is important to secure an effluent reasonably free from harmful bacteria. Where this is desired, practical sterilization can be accomplished by the use of hypochlorite of lime or chlorine gas. The apparatus in each case is similar to that used for the chlorination of water-supplies. The amount of

chlorine to effect satisfactory sterilization varies with the character of the effluent to be treated and ranges from 25 to 75 pounds of chlorine per million gallons.

Miscellaneous Processes

Experiments have been carried on in Boston and New Haven with the "Miles Acid" process, which consists of adding sulphur dioxide gas to sewage prior to sedimentation. It is claimed that the addition of the gas



NEAR VIEW OF SPRINKLING FILTER NOZZLE IN ACTION



CONSTRUCTION OF FLOOR, SPRINKLING FILTER, FITCHBURG, MASS.

The photograph shows the narrow concrete blocks which were used over semi-circular underdrains on the sprinkling filters

increases the precipitation of solids, and also produces partial sterilization. The method, however, is still largely in the experimental stage.

The electrolytic process consists of passing sewage through electrolytic cells between iron plates with or without the addition of lime, followed by sedimentation. The electrolytic action tends to coagulate the sewage, causing sedimentation to occur more readily and to bring about partial sterilization through the production of atomic oxygen and hypochlorite. Only a few plants have been constructed, and some of these are reported abandoned. From the results of published tests, it appears doubtful whether the electrolytic process accomplishes purification commensurate with its cost.

In small sewage installations, tank treat-

ment followed by subsurface irrigation has proved successful where soil conditions are satisfactory. Subsurface irrigation consists simply of discharging intermittently the effluent from a settling tank, through a series of tile pipe laid with open joints a few inches below ground. With porous soil the sewage seeps away to undergo the material purification effected by the organisms in the soil.

In conclusion, it may not be amiss to call attention to the necessity for proper operation of sewage treatment plants. Too often costly works are installed and then neglected. If sewage treatment works are to produce the results for which they are constructed, it is absolutely essential that competent and expert supervision be maintained over them.

Sewage Treatment to Protect Water-Supplies

Treatment of sewage is generally undertaken solely to prevent local nuisance and in those cases where the local nuisance otherwise produced would be so detrimental to the public interest as to warrant the expense of sewage purification. The conditions arising from local nuisance are not in general injurious to health.

The treatment of sewage to prevent the pollution of public water-supply has been attempted only in exceptional cases by small towns and cities upon small catchment areas, as, for instance, some of the villages upon the catchment area of Boston's water-supply. In these cases the party profiting

by the treatment has paid most or all of the expense. To make the process effective, it must be bacterially efficient and the treatment must apply to all storm-water flows. These two conditions make the application of sewage purification to cities on large rivers to preserve the purity of the streams for water-supply purposes practically out of the question in the present state of the art, and, in general, the purification of water-supplies can be carried out more certainly and at less cost than corresponding results can be reached by purification of sewage.—*Allen Hazen in American Civil Engineers' Handbook.*

Recent Developments in Gas Street Lighting

By F. V. Westermaier

OF all the public services rendered by municipalities, there is probably none more essential for the preservation of public safety, the comfort and peace of mind of the public, than street lighting. It is a service which must be as continuous and as complete as the life of the community itself. This involves responsibility of a high order and is so recognized by the directing authorities in the drafting of specifications for the work to be done.

The separation of the supply of gas from the maintenance of fixtures is largely responsible for the development of standardized fixtures and lamps, and service.

Standard types of gas lamps are adjustable to the particular quality of gas on which they are used, and to the provisions of contract specifications fixing the candle-power delivered and the rate of gas consumption.

At first glance, these standard lamps may appear rather complex, but as a matter of fact they are quite simple. The necessary elements are as compactly combined as possible, consisting of gas cock, automatic gas regulator and injector, Bunsen burner, mantle, chimney and chimney accessories.

The illuminating powers of the different lamps shown are as follows:

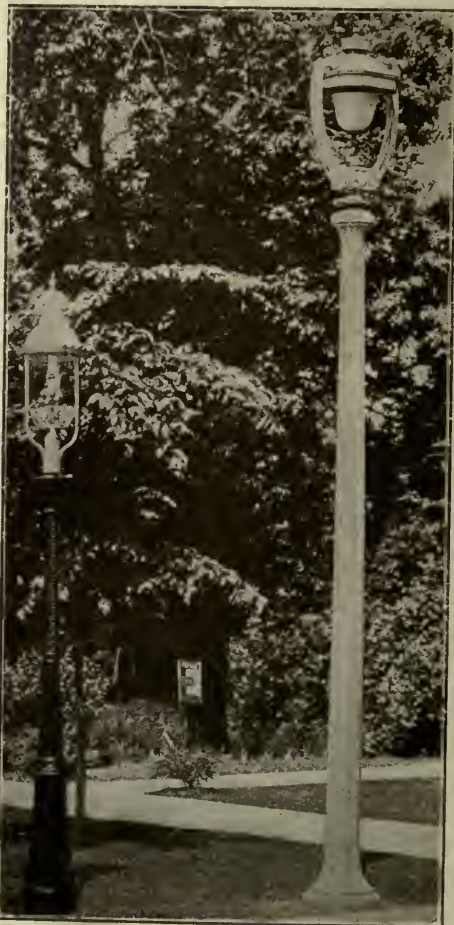
Lamp	Lumens per B.t.u.	Total Lumens
Single mantle upright....	.300	630
Single mantle inverted....	.400	720
Double mantle inverted....	.410	1,475
Triple mantle inverted....	.420	2,200 to 2,500
Four mantle inverted....	.420	2,950
Single mantle, high pressure	.525	3,775
Double mantle, high pressure .....	.525	8,400

The values for the high-pressure lamps are given in order to show the effect of pressure on efficiency, in lumens output per B. t. u. applied. Claims of considerably higher values, .750 to .900 lumen per B. t. u. have been made by foreign manufacturers of larger types of lamps.

High-pressure gas street lighting has not been encouraged in this country as in Europe, where it is very extensively used. The most notable installation in America was that at the Panama-Pacific Exposition

during 1915, in San Francisco. While its advantages are apparent, there is not sufficient revenue obtainable from street lighting alone to warrant the expenditures necessary for the installation of special mains and fixtures.

Because of variation in the quality of gas in different cities, according to the manufacturing processes employed, the adjustment of the standard type lamps to the local conditions is important. This involves determinations by tests to fix the setting of the gas regulator, its injector size, Bunsen



AN OLD-STYLE GAS STANDARD, AND THE NEW BOULEVARD TYPE THAT CAN BE USED FOR EITHER GAS OR ELECTRICITY



USING GAS STANDARDS AND SAFETY ISLES TO GUIDE TRAFFIC

proportions, and provisions for auxiliary air regulation to meet, within limits, any variation from the average quality of gas furnished. From the determinations made, a standard burner balance for that particular locality is obtained, and every lamp used there is made to conform to that standard.

The automatic control of the rate of gas consumption is not a recent development, but its application is an essential part in all the latest lamps designed. This controller, after it is adjusted to the local gas conditions, automatically maintains, under all variations in main pressure, a constant pressure below the fixed outlet injector orifice. It thus makes possible not only an accurate accounting for gas used, but also the maintenance of a constant flame within the mantle, thereby tending to produce uniform candle-power intensity.

In addition to the essentials for producing most efficient burning qualities, the lamps are designed to meet the requirements of service conditions: operation, trimming, replacement and interchange of parts.

The development of artificial silk mantles, both upright and inverted, for street lighting purposes has done much to improve and maintain the service. Not only are they stronger than those formerly made of cotton and ramie fiber, but they retain the initial candle-power values throughout the greater part of their life. Another characteristic is that they do not shrink and therefore always fit the flame. For service reasons the mounting of mantles has also received very careful attention. Upright mantles are now held in position on the carrier caps by nichrome wires, thereby eliminating the oxidation and subsequent failure that formerly occurred with nickel-

steel supports, and the tying on of inverted mantles to the magnesia rings is reinforced by weaving into the asbestos cord a very fine wire of nichrome.

The general uniformity in the height and design of gas posts throughout the prevailing street lighting systems made it possible to standardize lantern design in the familiar gas boulevard type. This lantern contains all the structural features necessary for the proper mounting of the gas mantle lamps, also to provide the necessary ventilation and protection against storms and drafts. It serves as the basic-principle pattern for all new lantern designs, which must conform to be efficiently serviceable.

The general tendency to improve the appearance of street lighting fixtures makes standardization extremely difficult because of the diversity of opinion as to what constitutes harmony of design in the combination of a standard and a lantern. As a result, a large number of different styles of fixtures have been designed, all of which have advocates as well as objectors. There seems, however, to be one point of agreement, in view of the numbers of installations made in various cities, which is that the upright type of lantern is more generally preferred than the pendant.

The need of lighting fixtures for directing the flow of street traffic has been supplied in several ways. Two styles are shown above. The fixture in the center foreground consists of a rather low standard mounted on a concrete base and topped by a globe of ruby flashed glass. In order to illuminate the standard and base, the flashing is cut away in the lower portion of the globe. As a matter of interest, it might be mentioned that when ruby glass became unobtainable, a satisfactory substitute was

found in a special paint preparation which, when used on clear glass globes, gave equivalent results.

The other type of traffic fixture is shown in the center background and consists of two pendant globes with inverted mantle lamps. This type also spreads clear light over the ground around the standard and base, but to a more considerable extent than the other type, and is generally utilized, on this account, in open spaces where the side illumination is low. The globes in this type are of ruby glass with the lower section cut away so as not to obstruct the clear light from the lamp in the lower zones.

Another special fixture type is also illustrated. Here a bronze bracket with pendant globe is attached to a concrete trolley and aerial transmission line pole, for the lighting of an important thoroughfare—a viaduct, into which four or five street grades are merged. The application of the standard double-mantle gas lamps to the bracket fixture as designed, seemed at first an almost impossible task because the lines did not admit of any change to provide for the necessary ventilator. What could not be applied externally was taken care of in the construction of the interior and the assembling of the different castings, so that the full efficiency and service value of the lamp was maintained without changing the lines of the original design. These fixtures are mounted 16 feet high and are so spaced that the illumination produced is remarkably uniform and of a satisfactory degree.

The service qualities demonstrated by the fixture for this particular class of lighting recommended its use for the lighting of another and longer viaduct of similar type in the same city.

In laying out these systems the engineers decided first on a definite classification of streets and then the application of fixtures designed to produce substantially uniform illumination. In both cases the use of gas as well as electricity was considered. The adaptation of a specially designed single inverted mantle lamp to the refractor fixture adopted was accomplished with excellent results. The type of inverted mantle lamp designed is particularly applicable to



**AN ATTRACTIVE BRONZE BRACKET WITH
PENDANT GLOBE FOR GAS STREET
LIGHTING**

refractors, and the resultant efficiency, about 90 per cent in lumens output, is high. The lamp is adjustable to the focal center of the refractor so that any desired projection of the maximum beam can be obtained. The maximum flux of light from the inverted mantle falls within the enclosing refractor, which explains the high degree of efficiency obtained.

In the future development of street lighting practice, it is certain that the application of scientific illuminating principles will become more general as municipalities grow to appreciate their real practical values. Those who have confidence in the peculiar fitness of gas as a street illuminant, because of its reliability and service qualities, believe that through the joint cooperation of all those engaged in street lighting service this aim will be attained to the immeasurable benefit of the public served.

ACKNOWLEDGMENT.—From a paper read at the annual convention of the Illuminating Engineering Society.

The Housing Problem in Great Britain

By Guy Wilfrid Hayler

Member, Institution of Municipal Engineers and Royal Sanitary Institute

ENGLAND has made many social experiments in the last twenty-five years, achieving legislation against tremendous odds. Much of this has only broken the ground, and the real and tangible crop from these seeds is about to be realized in the solving of the housing question and the overcoming of many of the obstacles to civic improvement.

The movement for better housing goes back many years, passing through the stages of building-society efforts, model cities erected by enterprising employers, co-partnership schemes, town planning by municipalities and compulsory government action. At present it seemingly rests with the Government to achieve results, not very apparent just now but certain to be attained with the likely advent of a Labor Government to power.

Not alone social reformers, but the great mass of the people, are resolved that the words of Premier Lloyd George that "the land must be made a fit country for heroes to live in" shall be materialized.

Last year King George, receiving over 200 housing reformers at Buckingham Palace, said:

"If this country is to be the country which we desire to see it become, a great offensive must be undertaken against disease and crime, and the first point at which the attack must be delivered is the unhealthy, ugly, overcrowded house in the mean street, which we all of us know too well."

The war has made the housing question one of the most pressing of the social problems of the day. English workers in town and country were never so much in need of houses as they are now, and the deficiency is reckoned at over 500,000 in England and Wales alone. Thousands of houses have been unrepaired and have fallen into sheer ruin during the war, so that large numbers of people are practically homeless or unable to find a liveable or likeable house. Married people with families cannot get employment, and many cannot work where they wish to work—all for the want of houses.

The Milestones of Housing Progress

The landmarks of housing propaganda in recent years stand out conspicuously: the establishment of the Letchworth Garden City, 1903; the Town Planning Act of 1909; and the Town Planning Conference and Exhibition of 1910. Practically all later efforts and legislation have been based on the influence of these. The example of the First Garden City has been slowly appreciated, and education in good principles of house and site planning has made much progress. The Act of 1909 was largely a failure, in part because of the cumbersome procedure of its working, and also because of the lack of an intelligent knowledge of the comprehensive treatment of town growth. Housing reformers, realizing that popular education is required, that legislation cannot go very far ahead of current thought, have been spending a great deal of time and expense on propaganda. The Town Planning Act of last year is the result of the leaven working.

Under this last-mentioned act, the Ministry of Health—an excellent piece of governmental machinery—has power to compel the preparation of compulsory town-planning schemes. The Housing Act of 1919 gave the local authorities power to acquire land and finance housing schemes, subject to Government approval. Up to the latest date, 8,320 schemes, covering 60,000 acres and 95,820 houses, were submitted, and of these, 3,942 schemes, covering 33,500 acres and 78,437 houses, were approved. Bids were received for 27,745 houses, and 23,323 were approved, and on January, 1920, 10,408 of these houses had been begun, and some 5,000 additional new working-class houses were also in progress.

The Actual Difficulty

While under the exceptional circumstances created in a country which has just concluded a great war, the fact that some 16,000 houses are being built would seem a good achievement, the state of affairs with thousands clamoring for houses makes it a very small contribution to the solution.

Premier Lloyd George has said: "The housing difficulty did not exist because the municipalities were not prepared to build, but because they could not get the workmen, and yet after an appeal it had been decided by the great trade unions that they could not suspend their regulations." This is a reference to the proposal for a "dilution of labor," allowing unskilled workmen to enter the industry. The Labor Party in retaliation denies the shortage of labor, saying that enough building workers can be obtained under proper conditions to erect 114,000 houses a year, being 51,500 in excess of the Government demand—this in spite of the fact that 350,000 demobilized soldiers are said to be in want of employment. It is also pointed out that 50 per cent of the building material is in the hands of "rings," which in the face of condemnation by a Government committee are still holding up supplies for excess profits. The crux of the situation is that owing to the high cost of labor and materials the houses cannot be produced at the prices which were originally estimated.

Remedies That Are Being Tried

Various ways out are proposed. The Government on December 4, 1919, introduced the Housing (Additional Powers) Bill enabling private builders to be subsidized at the rate of £160 per house, the total grant for this purpose being fixed at £15,000,000. It also proposes to arrest "luxury" building and prevent the demolition of existing dwelling houses. Power is also given to local authorities to issue housing bonds at a rate of interest not yet fixed. This bill, generally accepted by housing reformers, is still under consideration.

In the meantime considerable discussion is going on as to ways of achieving economy. In the matter of materials, Clough Williams Ellis, architect, has been advocating a return to cottage building as in the days of remote antiquity. He proposes a revival of "mud walls" in the form of cob, pisé de terre, chalk (compost and block), clay lumps, and sun-dried bricks. In many parts of southern England this was the traditional building method, and its revival has influential support, notably by St. Loe Strachey, the well-known publicist, and the *London Spectator*.

Probably economy in materials and planning and reduction of building standards

have been carried to "the irreducible minimum," and it is more through the organization and efficiency of labor that a solution will be arrived at. The example of Letchworth has resulted in the work going forward for the establishment of a Second Garden City at Welwyn near London, and public utility companies are showing great activity. At the same time the municipalities in some cases are considering "direct labor" proposals. The Corporation of Glasgow has recently completed 92 model dwellings and begun to build 3,500 more, putting 10 on each acre of land. An exhibition of plans has been held, and £5,000 given in prizes for originality and excellence in design and quality. In Liverpool the City Council has decided to build 400 houses by direct labor and materials directly purchased. In Manchester building operations by means of guild socialism are proposed, and a guild has offered to build 2,000 houses. It is claimed that whereas the ordinary workman will build six houses a year, costing £940 each, the guild workman will build nine houses a year, of a better kind and costing £800 each. The trade unions propose to take control of operations as far as labor is concerned, substituting group credit based on the power to produce, for bank credit based on the purchasing power of gold. This—at present—theoretical scheme is to be translated into an actuality; it has considerable support as a real effort to introduce the touch of idealism and individual craftsmanship into the building of a workman's home.

What to Build

The country is "thinking housing" as never before, and not only *how* to build but *what* to build. The people are asking for the right kind of houses. This means, primarily, houses of comfort and beauty built with proper regard for sunshine, fresh air, light, sufficient sleeping accommodation, and the application of the labor-aiding discoveries of domestic science to the home. The women, who are now a power to be reckoned with in public life, are particularly insistent in their demand that the old-time drudgery associated with the ill-contrived houses of the past shall be eliminated. The success of the new housing lies with the erection of better-planned and better-built houses and all-round improvement in domestic conditions which will assure a higher



VIEW OF SOUTH FRONT OF THE DESIGN FOR COTTAGES IN THE MIDLAND INDUSTRIAL AREA (LEICESTER, ENGLAND), WHICH BRINGS A £500 PRIZE TO EVELYN SIMMONS AND LESLIE GLENCROSS

standard of living, to the lack of which is largely due the industrial unrest so prevalent throughout the country. To the architects of to-day has therefore come the opportunity of creating a lasting and worthy memorial of the Great Peace.

One of the most interesting developments is the competition held by the London *Daily Mail* for the best types of workers' homes. The results have recently been made known and \$10,000 awarded in prizes for acceptable plans. Over 3,500 designs were passed on, the judges being a committee of such acknowledged experts as: Professor S. D. Adshead of the London University Town Planning Department; Guy Dawber and Courtenay Crickmer, well-known architects; Seeborn Rowntree, the sociologist; Captain Reiss of the Garden Cities Associations; Mrs. Sanderson Furness of the Labor Party; and Mrs. Barton of the Coöperative Union.

It was recognized that a house is not a thing that can be considered by itself; it belongs to the place it is put in, and is good or bad according to the needs of the dwellers. The best of all estate developers near London won his first success by making the garden first and compelling architects to build according to the demands of the garden, lawns, and general view. This principle was observed as far as it was possible in this competition.

The designs were in most cases very original and showed a high sense of the need of

economy while at the same time having much artistic excellence. The cottages throughout are of the group type, four houses being combined in one block. Specimens of the prize-winning plans are to be built immediately.

A great deal of controversy has been aroused over the contention of some critics, that the country and industrial areas were likely to be spoiled by the erection of barrack-like things called "homes." This competition has, however, proved that economy and comfort may be achieved without the sacrifice of beauty. The prettiest houses are, as often as not, the simplest, and the simplest are the cheapest to build.

Besides the *Daily Mail*, another of the great London newspapers, the *Daily Express*, has been arousing interest in better housing. It offered \$7,500 in prizes for the best houses for (1) unskilled laborers, (2) skilled artisans, and (3) clerical workers. The President of the Royal Institute of British Architects, Henry T. Hare, William Dunn and A. E. Richardson, architects, acted as assessors, and the result of the contest has been decided. The designs have been on view at the Model Homes Exhibition in the Westminster Central Hall, London, and visited by many thousands of people. Not only have plans been exhibited, but special models of them have been made so that anyone, however unversed in building, can see what is intended. The use of the model to illustrate houses has been widely

appreciated, and it is realized that not only can it convey a clear idea of what is intended, but it strikes the popular note so much required. In another exhibition, town planning has been conveyed to the multitude by the same means, a large stage showing the chaos of an existing town and by its side a transformation into order and harmony produced by scientific planning.

Beyond some slight attempts at this graphic portrayal of housing conditions, nothing on these lines has been hitherto used in America, and the idea is one well worth consideration. The London exhibitions have not only shown the general phases of housing but have gone into details, such as consideration of color in the decoration of the home and its bearing on the lighting

bills and on the health and good temper of the occupants; also the many new labor-saving devices on the market.

All the Government housing plans, which, like most official information, have been hidden away in blue books, have been likewise transformed into large-size models, making a wonderfully attractive presentation of the state-aided housing schemes.

The eyes of the world are upon England in her reconstruction program. The moment is opportune for a great forward movement in housing, and we shall have much to learn from the way John Bull is doing it. We must act wisely, always remembering we shall be false to ourselves if the new houses are not as worthy of our present-day civilization as we can make them.

Beautify the Surroundings of Your Public Buildings



Courtesy C. M. & St. P. Railway.

APPROACH TO THE COURT HOUSE AT WEBSTER, S. D.

Safety Cars Solve Many Transportation Troubles

The One-Man Electric Car Has Demonstrated Its Value in Many Cities in the United States

THE one-man safety cars which have been introduced in a great many cities thruout the country have met with almost universal approval. They consist of a single-truck car with a door at the forward end so that the motorman also acts as conductor. The cars are almost absolutely safe; they are fool-proof and almost accident-proof. If the motorman were to die while in charge of the car, the car would come to an immediate stop. If he were to jump from his position at the controller, the same result would follow. The annoying step from the vestibule into the car is done away with, and the seats are even more comfortable than those in the heavier equipment. The seating capacity is sufficient; thirty-two persons can be seated at one time on almost all the lines except those which carry the heaviest traffic. The cars operate with more speed than the larger cars and get under way with more rapidity. This means that quicker time can be made, assuring prompt service. As the cost of operating, particularly the cost of electric power, is materially reduced, more cars can be operated on each line. All these and other advantages of the one-man safety cars have greatly increased their popularity.

In Ogden, Utah, which was one of the first cities to adopt this type of transportation, the majority of the city cars were of old design, very heavy and of small seating capacity, and in consequence the cost of operation and maintenance had been extremely high. The constant necessity of repairs caused congestion in the shops and greatly irritated the traveling public.

Ogden has a population of about 40,000, so distributed that all parts of the residential districts are relatively close to the business center. The result was that people walked to town in case they had just missed a car; and even tho a fifteen- or twenty-minute car service was given, the operating company lost a large revenue. A careful tabulation was made as to car hours on each line, cost of maintenance, platform labor and decreased power consumption, and it was found without question that the safety cars would fulfill every requirement of traffic conditions. Cars of the standard double-end type, equipped with Westinghouse motors, and airbrakes and complete safety car fixtures, were purchased. The motormen or conductors operating the safety cars are allowed 5 cents per hour in addition to their regular pay. This has

proved entirely satisfactory from the labor standpoint, and has decreased the actual cost of operation of the various lines.

In Norfolk, Va., the cars are operated through very narrow and congested streets. Formerly the line was operated with seven cars on a ten-minute headway. Now a seven-minute service with ten cars is given, the car mileage has been increased 38 per cent, and the number of revenue passengers has increased approximately 20 per cent.

In Petersburg, Va., the cars have been used to replace old single-truck longitudinal-seat cars with a seating capacity of 24 passengers. With the decreasing soldier traffic



EXTERIOR OF A TYPICAL ONE-MAN SAFETY CAR

from Camp Lee, the density of travel did not warrant an increase in service, so that a car-for-car replacement was made. The new cars are so convenient and comfortable, however, that a slight increase in travel has resulted.

In Richmond, Va., the cars are operated on lines which handle the most congested travel in the city. Service has actually increased 55 per cent on one line and approximately 40 per cent on another. In August of this year, a test trip was made by a number of municipal officials to determine whether or not the operation of a street car by one man was hazardous. The car was put through various tests on the level and on some of the 7 and 8 per cent grades, to the entire satisfaction of the Director of Public Safety and other officials present.

The maximum permissible load in any of the cars in Richmond is placed at 50 passengers, and when the car has this number of passengers aboard the sign "Car Full" is shown. This is a welcome innovation for the people in the car, and since very frequent service is given, passengers who are passed by do not complain. One of the features which it appeared would cause trouble was the necessary separation of races on the cars of the southern lines. This difficulty was successfully met by the installation of a sign requesting colored patrons to fill up the seats from the rear, and white patrons to fill up the seats from the front.

In order to decrease the work of the operator as much as possible, the matter of reports has been cut down to a minimum.

The Opinion of the Mayor of Nashville on the One-Man Car

TO THE EDITOR OF THE AMERICAN CITY:

Replying to your inquiry of April 1 in regard to an ordinance recently passed by the Board of Commissioners of the city of Nashville prohibiting the use of one-man street cars here, will say that this bill was enacted by a vote of 3 to 2, the writer being in the minority. It is true that the abolishing of the one-man cars had been agitated in our city by a certain class [the labor unions—*Editor*] prior to the introduction of the city ordinance referred to. The one exit on these cars, involving the race question, was practically the only objection made by those favoring the bill. Personally, I saw no



ONE OF THE SAFETY CARS OPERATED BY
THE UTAH-IDAHO CENTRAL R. R. CO.

merit in this contention, but realized that in the one-man car the public and the street railway company were vitally interested, from the fact that it was solving the great problems of service and economical operation, both of which to-day are the supreme issues of every public utility and the community they serve. In the opinion of three city commissioners the operation of the one-man (safety) cars was a discrimination of service, while the minority two commissioners thought it was a matter of better service at a lower cost.

Non-recording fare boxes are used, so that the only report made at the end of a day's run is the time on and off and the register reading upon taking the car and leaving it. The elaborate trip reports have been entirely discarded. A simple form of safety car transfer has been designed which will permit the operator to punch the time before starting from the end of the line and will necessitate only one more punch at the time of issuing the transfer.

In preparing the public for this type of service, an educational campaign was conducted for fully ten months, starting before the cars were even purchased. Full description of the cars, a statement of places where they were used, advantages to the public and other details were given out in an interesting and instructive manner.

In many cities where there are municipally operated street car lines, the safety car will prove a great convenience, as it reduces operating costs, and is always satisfactory.

WILLIAM GUPTON,
Mayor.

Nashville, Tenn., April 7, 1920.

Where City and Nation Unite to Act as Summer Hosts

Municipal Camps in National Forests

By Arthur H. Carhart

THE advent of the auto argonaut has brought a new development to many towns throughout the country. This is the municipal camping ground so often encountered in the towns and cities of the West. Whole families take to the road, equipped with the old reliable family car, a tent, air mattresses or camp cots, and cooking utensils, and live the life of the gasoline gypsy while literally "seeing America" at first-hand.

Recognizing that the traveler by auto is a good friend to have, many towns have done much to help him along his way. Municipal auto camps have been established in communities along great trunk roads of the country, where one may find many conveniences and in reality be the guest of the town in which he makes his over-night stop. Generally, good water, sanitary arrangements, fuel, fireplaces, a place to pitch tent and another to park a car are offered to the city's guest in camp.

Truly the towns through which these auto tourists pass have found that a municipal camp is a good thing. Each year sees more camps built. They are a good advertisement and they make friends. Further, they actually bring money to the town, for the guest at the municipal camp must have gasoline, tires, oil, picture post-cards, pancake flour, auto veils, goggles, candy, chewing gum, cigars, bolts, paint, overalls, and a multitude of other things. So, from many angles the establishment of a municipal camp is a good business proposition.

An Extension of City Hospitality

Four Colorado towns have gone one step farther. They have arranged for spots which are designated as municipal camps, but which are located several hours' drive from the community. In each case these are areas within the great National Forest playgrounds of the state and are near some of the most scenic spots of the region. There is an agreement between the city and the United States Forest Service in each

case that this area shall be first utilized as a municipal camp and that the other uses that may arise in the area will be secondary to the camping use.

True, anyone can go to a National Forest and camp as much as his heart desires. But in these camps the same idea is followed out that is found in the municipal camp areas within the city limits. A visitor is the guest of both the municipality and the United States Forest Service. Sanitary conveniences are installed, fireplaces are built, sign-boards direct to places of interest and the next camp, and inviting trails lead to outlooks on the best scenery the region can offer.

The Forest Camp of Fort Collins, Colo.

Far in the cool depths of the canyon of the Cache la Poudre the city of Fort Collins has its camp, where vacationists are welcome as guests. By the camp flows the crystalline Poudre River, and the big, gamey trout for which the stream is famous may be seen on a sunny day in the cool, deep pools just at the edge of the rushing current. The road leading to the camp passes many beautiful features of the canyon, and the scenery near the camp, while not the most awe-inspiring that may be found, is altogether satisfying. Gray Mountain, Tumbletop, Scarhead and Sheep Mountains all lift their heads above the tumbled mass of hills near the camp, and from their tops may be seen the snowy heads of the great Continental Divide. The canyon of the Poudre itself is beautiful, and many little side canyons offer delightful rambles.

This whole area is being developed by the city of Fort Collins and the Forest Service. It is for the use of anyone who will come and stay. There is no fee for camping and there are no rules to follow except that care in protection of public health and in fire prevention must be practiced. This is the method in all the camps which are being developed after this plan in the forests of the state of Colorado by the Forest Service

and municipalities. Fort Collins has one of the most attractive sites for a camp in the whole canyon. The city thus not only offers conveniences in the municipal camp within the borders of the town, but also goes farther in affording another place in the mountains where the same guests may still enjoy the hospitality of the town.

Longmont's Camp in the Canyon

Longmont, Colo., a thriving little city near the mountains of the eastern slope of the Rockies, has coöperated with the U. S. Forest Service in making attractive for visitors a spot in the scenic canyon of the Middle St. Vrain. This is located at the end of about half a day's drive through one of the most pleasing canyons of the whole Colorado National Forest. There is nothing spectacular about this canyon, but every foot of the way from its mouth to the campground is pleasing to the traveler. This feature of the visit to the camp is worth all the time that can be given it.

Near the camp are two lakes where fishing is good and streams in which trout play. The camp is a great open park, from which the craggy head of Mount Audubon may be seen, and a short day's hike will take one to the Arapaho Glacier, the only glacier that is active in this section of the country. A waterfall is but a short walk from the camp, and by climbing over several interesting routes one may secure a splendid view of the great sweep of the Continental Divide and the timbered slopes and high reaches of the Colorado National Forest. Longmont invites each motor car adventurer to be her guest in this splendid camp, where glacier, lake, river and crag will delight the lover of nature.

Where Florence Entertains Her Motor Guests

In the picturesque canyon of the South Hardscrabble and within the frowning presence of Mount Rudolph lies the municipal camping ground of the city of Florence. Through the midst of the grounds dashes the laughing South Hardscrabble Creek, and if one is quiet, beaver may be watched working in the many ponds they have built near the camp.

Like all the other municipal camps in Colorado's National Forests, the Florence camp is easily reached over a good road. And like all the others too, the last part of the drive from the city is through a canyon,

that of the South Hardscrabble. When the camp is reached, there is plenty of room to park several hundred automobiles on the grounds.

The use of the grounds by local people has been very gratifying to those who backed the movement to have camps established here. On one day a group of 500 people visited the grounds to attend the dedication of the camp. On another day without any special exercises to attract, there were over 700 who used the camp and its facilities.

Pueblo's Picturesque Camp

The city of Pueblo has probably used its camp more than any other of the four towns. This is natural, for Pueblo is the largest of the quartette. Many people came to picnic there last summer, and on one hot day over 700 autos went up the canyon to the camp. On a clear cool day in the latter part of October, over 40 auto loads went to this Pueblo camp to picnic, and the use during the rest of the season was equally great.

This camp is in a picturesque canyon through which splashes a clear little stream known as Squirrel Creek. At one place the stream tumbles down hundreds of feet in short jumps, and in the little distance of a quarter of a mile climbs down the side of a large hill. At the foot of this cascade is one of the camping groups of the area, and a short distance down stream there is a large spring of finest water where the other camp group of the Pueblo area may be found. Shelters, sanitariums, fireplaces, fuel and good water are found handy for the camp's guest. And the scenery should satisfy any lover of nature.

During the coming year the camps of the Pueblo and Florence groups, which are both in the delightful Greenhorn Mountains, are going to be enlarged. The demand is so great and the opportunity for getting these enlargements is so good that a great group of improvements has been planned.

What These Cities Have Done, Others Can Do

This new movement is an innovation for the cities of Colorado. The same opportunity is offered any other community which is near a National Forest. There was much favorable comment on these camps during the season of 1919, and the use has in every case merited the expenditure and effort put into the camp building.

The real appeal to a municipality for this

arrangement is that while the city may entertain her guests in an auto park near the edge of the town, unless there is some other place to which to send the visitors they soon move to the next stop, generally being the guests of the community only one night. Where one of the National Forest playgrounds has been developed by the town and the Forest Service in coöperation, there is a delightful camping place right in the midst of mountain scenery, near good fishing and the roughest kind of mountain climbing. The visitor coming to the city's town camp can be sent to the mountain

initial season in the municipal camps within Colorado's National Forest playgrounds becomes generally known, applications for areas of the same kind will be filed with the Forest Service from different parts of the country. There is no charge for the ground, there is no lease, there is no transfer of the title, but the ground is set aside for the use of camping; and because that action follows the request of a certain town, that town coöperates in the development and has a certain pride in sending tourist guests to the area. And in each case also there has been a real and great benefit to



Courtesy of the Denver Tourist Bureau

A DENVER MUNICIPAL CAMP WHERE VISITORS ARE HOUSED ON THEIR WAY TO THE FOREST CAMPS

camp and there still be the guest of the municipality. The result is obvious. The tourist leaves the state with more vivid recollections of the hospitality of that town than of any other. He is likely to come back to this community which has not only played the host in the borders of the town but has gone farther in hospitality and provided a place in the heart of the hills where the guest may still have reason to thank that town for its consideration and foresight.

When the success that has attended this

the people of the town in the use they have had of each camp.

There are millions of acres in the National Forests of the United States. These Forests extend from the southern part of Florida to the northernmost point of Minnesota, and from the east coast to the west coast. State forests are being created by wise legislatures, and municipal forests are found near many towns. There is no geographical limit to this idea, for it is as big as the country.



Camp Grounds for Lincoln Highway Tourists

By Thomas B. Reid

Supervisor, Tama County, Tama, Iowa

ONE mile west of Tama, directly adjacent to the Lincoln Highway on the banks of a beautiful little creek, The Commercial Club of Tama has provided a free camping ground for Lincoln Highway tourists. It came about in this way: Living directly on the Lincoln Highway, we have seen thousands of tourists pass in the hot, dusty season of the year with no place in which to rest and cool off, and no provision of any kind for their comfort and convenience. The writer felt that this was not in keeping with the county's reputation for hospitality, so he took it up with a number of his friends in Tama and with Mr. Carmichael, the owner of the land. The discussion of the problem brought out the need for some place where tourists might make temporary camps, open their lunch baskets, prepare their meals, and perhaps set up their tents for the night away from the dusty roads—for, unfortunately, the road is still dusty, as we have not yet been able to arrange to have it properly paved.

After due consideration, the site of the

beautiful walnut grove shown in the accompanying illustration was selected as a suitable place. We have provided a well, a stove, and a toilet, and expect to build a couple of brick ovens next season and supply the necessary wood for camp cooking. The Club does not expect to provide any buildings, as the campers who stay all night are usually equipped with tents, and in bad weather can find accommodations at the hotels in Tama.

It should be noted that the large sign-board in the foreground calls attention to the fact that all the facilities are free. The camping grounds could easily have been made to yield a little revenue, but the men who donated the money were of the opinion that the good will to be purchased by the provision of these facilities without charge was of greater value to the community than the slight revenue that might be derived. The expressions of appreciation and the favorable comments generally that have come to them as a result of the free camping grounds seem to bear them out in their belief.

Assessments for Street Lighting

By A. L. H. Street

THE passage of a law in Ohio relating to the assessment of property specially benefited by street lighting draws attention to the fact that the appellate courts have been called upon in several instances to pass upon the validity of such measures.

In the case of *Ankeny vs. City of Spokane* (92 Washington Reports, 549; 159 Pacific Reporter, 806; L. R. A. 1917A, 1093) it was decided that the furnishing of electrical energy for street lighting purposes for a limited term is a local improvement within the meaning of a constitutional provision permitting the making of such improvements by special taxation of property benefited. It was also decided that the inclusion of a street-lighting system of ornamental features does not prevent the assessment of the added cost thereby caused upon the property benefited if ordinary construction is not so far departed from as to warrant a court in saying that the municipality exceeded its legitimate powers. In this case the Court said, in the course of what is probably the most exhaustive judicial opinion on this subject:

"All of the cases where the question has been raised seem to agree that the expense of erecting the lamp-posts, the conduits for the wires, and the cost of the wires and lamps necessary for an electric street lighting system may be charged to the property benefited as a local improvement. No case has been called to our attention, however, where it has been determined that the electric energy necessary to light the plant may be treated as a part of the plant and the cost thereof charged to the property benefited as a local improvement.

"Following the rule of the courts, which do not require permanency as an essential element of a local improvement, we see no reason why it may not be so charged. It is from the electric current that the light is derived, and it is the light that furnishes the entire benefit to the property. The lamp-posts, the conduits, wires, and lamps, are but the means of carrying the current and diffusing the light at the proper places. Of themselves they are of no benefit to property abutting upon the streets in which they are constructed. On the contrary, standing alone, they would be obstructions in the street, narrowing and hindering its use as such, of no possible benefit to the public at large, and rendering abutting property of less, rather than of greater, value. No rule of law would justify their erection and maintenance in a street, were they not the

necessary means to a desired end. * * * We think * * * that the mechanical contrivances and the electrical energy are but parts of a complete whole, and that it is the whole, and not one of its parts, that confers the benefits. As such, it seems to us clear that the cost of the whole may be charged as a local improvement in so far as private property is benefited thereby."

In the case of *Ewart vs. Village of Western Springs*, 54 Northeastern Reporter, 478, it was decided by the Illinois Supreme Court, that the power house and generator plant of an electric-lighting system, together with the engine and appliances located at the power house, were of public benefit and the cost thereof must be met by general taxation, but that the poles, electric conductors, lamps and appliances connected therewith were of local benefit and their cost might be met by special assessment. Reasoning along the same lines as the Washington Supreme Court the Illinois tribunal said:

"If the water-mains and hydrants of a system of water-works which extend along the streets of a city are of local improvement, we see no reason why the poles, wires, and lamps in an electric light system are not also a local improvement. * * * It cannot be said that property, upon a street lighted with electric light is not more valuable than property upon a street where there is no such electric light. Property is, in fact, especially benefited by electric or other adequate lighting along the street on which it is situated, quite as much as it is benefited by water-mains. * * * The test whether an improvement is local or not depends upon the question whether or not it specially benefits the property assessed."

In the case of *Parker vs. Wallace*, 80 Misc. Rep., N. Y., 425, a New York court held that the provision of the Auburn city charter, authorizing the council, "in its discretion, to create and alter a lighting district or districts within such city as it may fix and determine, with full power to order such construction and installation of lighting or additional lighting as it may prescribe, the cost of which shall be fixed, apportioned, assessed and collected in the manner and at the time as may be designated by the common council," authorized the assessment of the cost of a lighting system against the property benefited.

But in the case of *Putnam vs. Grand Rapids*, 25 *Northwestern Reporter*, 330, it was ruled by the Michigan Supreme Court that towers erected by an electric light company could not be regarded as a "local improvement" within the tax laws, altho used in performance of a lighting contract with the city.

And the decision of the Indiana Supreme Court in the case of *Wilt vs. Bueter*, 111 *Northeastern Reporter*, 926, establishes the proposition that right to levy a special assessment on account of a lighting improvement depends upon clear statutory authority to that effect. The Court remarks in this case:

"It is well settled that a city may have power to make an improvement and yet have no power to make special assessments against property benefited to pay the expenses of such improvement. The power to assess the costs of improvements against abutting property is purely statutory, it does not exist in the absence of a statute, and, when granted, the extent of the power is limited to that which the statute expressly confers. * * * It has been held that the power thus granted is part of the sovereign power of the state. It will not be inferred from a statute, but must be expressly granted. * * * Statutes on this subject are strictly construed in favor of the abutting property owner, and in case of doubt as to the existence of such power the doubt is resolved against the municipality."

Parallel Pavements of Different Types on Grades

By Charles W. Geiger

ON some of the hills of San Francisco where there is considerable traffic of both automobiles and horse-drawn vehicles, two kinds of pavement have been laid, in order to meet the requirements of these different types of traffic.

The photograph shows one of two streets treated in this way. On one of the streets the sides are paved with basalt paving blocks and the center with asphaltum. On the other the center is paved with basalt paving blocks and the center with asphaltum.

The grades on these hills are very steep, and it is necessary for the horses to have

a rough surface in order to get a foothold. An automobile running at high speed over this block pavement is hard to control, for the reason that the wheels bound over the rough surface; and as they are not in firm contact with the road, during part of the time there is a tendency for the machine to skid sidewise. The smooth asphaltum section of the street, however, furnishes a perfect running surface for automobiles.

This method of combining two kinds of pavement in the same street is of such practical value as to make it desirable for wide adoption thruout the country.



A STREET IN SAN FRANCISCO WITH DUAL PAVEMENTS TO ASSIST DIFFERENT TYPES OF TRAFFIC

Careful Citizens Can Minimize Street Cleaning

By Charles O. Davis

Superintendent, Bureau of Street Sanitation, Milwaukee, Wis.

STREET cleaning can be accomplished much more quickly and thoroly with the latest improved equipment than by the old hand methods employed before machines came into use. The big job is to keep the streets clean with little or no help from the public, many of whom thoughtlessly throw into the street any kind of material they do not want, that being the most convenient place in which to deposit it. There are many laws and ordinances governing these particular acts, but as they are never enforced, they furnish little or no help.

The same people who daily violate these rules and regulations are the first to condemn the officials in charge of street cleaning for the unsightly condition of the street on which they live or over which they pass. Yet they themselves often create this condition by cleaning their yards and depositing rubbish, leaves, paper and lawn cuttings on a well-paved and well-cleaned street.

This practice has become more noticeable in these times of few hours' work and many hours' recreation, especially on Saturday afternoon, which seems an accepted time to perform the work of yard cleaning. Altho the street cleaning forces have gone over the street on Saturday forenoon, cleaning it thoroly, on Sunday with the conglomeration of dirt it is unsightly, causing the traveling public to comment unfavorably on the condition of the street.

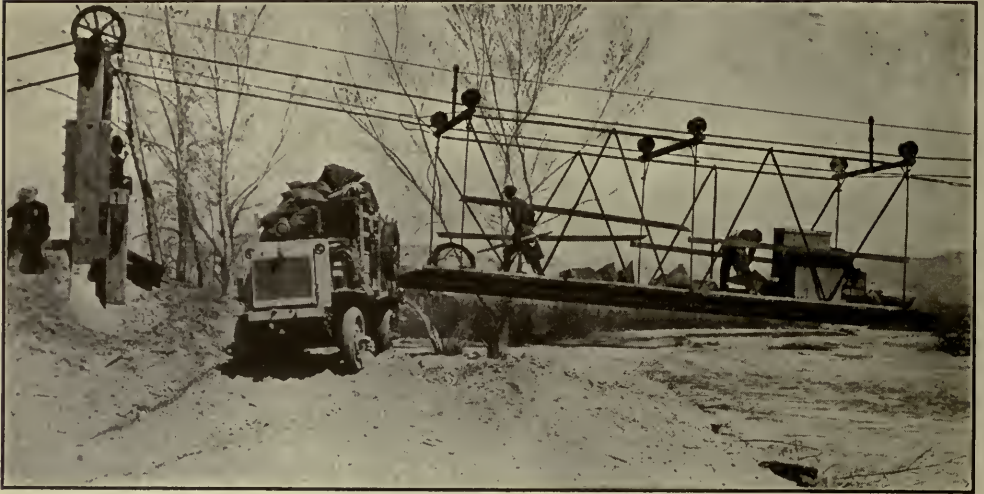
I should like to see fewer laws and a rigid enforcement of those left in effect. The matter of street cleaning, ash and rubbish removal and garbage collection is a serious business for any city government. It should be taught in the kindergartens, the graded schools, the high schools and on through college, so that when young men become business men they will take pride in keeping the streets in front of their homes and places of business clean, rather than throwing anything and everything they do not want to keep into the street or alley.

Children should be taught at home as well as in the schools not to break bottles or any other kind of glass in streets or alleys. This is done daily by boys going to and from school, and anyone driving a motor suffers from this particular prank, which injures the tires. The parents at home should not deposit milk bottles in ash boxes, but should return them to the dairy company, which is more than anxious to take them every morning. If care was taken in this matter it might not be necessary every ninety days to appoint a commission to investigate the high cost of milk. These bottles cost from five to seven cents each, and if not returned are sure to find their way to the street, the alley or the city dumping ground. It is surprising to know that the number of unbroken milk bottles recovered from city dumping grounds runs into thousands every month and that as many more are broken in the streets and alleys. This is only one of the many difficulties in performing the duties of a street-cleaning department. Auto tires have sometimes been badly damaged by broken bottles one hour after the street has been thoroly swept and flushed.

City streets can be as clean as the kitchen floor, pleasing to the eye and a help to health. This can be done with the full co-operation of all adults and children, and with the use of modern motor-driven street-cleaning equipment, picking up all dust and removing all heavy substances for blocks before emptying at the city dumping grounds, these sweepers being followed by washing machines. Many colds and coughs, even the "flu," are aggravated by high wind and street dust, which pursues one in the store and in the house, as well as on the sidewalk.

If all the civic societies, schools and business associations would preach the duty of helping to keep the streets and alleys clean instead of condemning those in charge of this work, we should have better-appearing streets than we now have in most of the American cities.

In Transportation, Sanitation, and Fire Protection the Motor Truck Serves the Community



Courtesy Leslie's Weekly

THIS UNIQUE FERRY SERVES A MOTOR TRUCK ROUTE IN CALIFORNIA

"Motor trucks that are dependable—on the job in all kinds of weather—and with sufficient power to haul capacity loads up grades and over soft, newly made roads—are money savers and money makers for any city."



USING A TIFFIN FLUSHER TO CLEAN UP SOME PARTICULARLY BAD SPOTS IN THE GUTTER AND TO FLUSH OUT CATCH-BASINS



A PORTION OF THE SHREVEPORT, LA., MOTORIZED FIRE DEPARTMENT



AMERICAN-LA FRANCE FIRE APPARATUS FOR BELIZE, BRITISH HONDURAS, CENTRAL AMERICA

The equipment depicted above includes two four-cylinder engines with pumps capable of delivering 600 gallons per minute at 120 pounds pressure. The same type of chassis was used to mount two 60-gallon tanks to make a speedy chemical engine for use at small fires. The fourth piece of apparatus, shown at the right of the picture, consists of a four-wheel tractor attached to a city-service truck which is equipped with a steering device. This was made necessary because of the extremely narrow streets in Belize, which made long-base trucks out of the question.



CAN YOUR FIRE TRUCKS TACKLE GRADES LIKE THIS IN ANSWERING ALARMS?
A Four-Wheel drive truck at Clintonville, Wis., frequently has to negotiate hills like this in going to fires

Attractive Street Name Signs

By Robert Kingery

CORRECT street name signs are practically as important as the existence of the street itself. People must be enabled to readily find their way about a town or city. Happily this is being realized by many communities which have heretofore been negligent, and the street that is not plainly marked is the exception rather than the rule.

Two very encouraging tendencies in street marking at the present time are that signs are being made more durable than in the past and that they are becoming more attractive and artistic without losing their legibility. Tourists and natives alike have for years been familiar with time-worn, illegible signs, pointing sometimes in the right direction, but frequently in any but the correct one. These are everywhere being replaced by durable name signs fastened rigidly to the support, and pointing in the right direction. In many cases the lamp post is used as the support for name signs, and the problem of attaching the sign to the post has been solved in some interesting ways.

The Lincoln Park Board of Chicago has designed a concrete lamp post which is the standard thruout all of the Lincoln Park District. In planning the street name signs it was decided to set the name in the concrete with bronze letters, reading down. The name is lighted fairly well at night by the globe just above, which is large enough to shed some light on the sides of the post. From the driver's standpoint this is not so satisfactory an arrangement as it might be, because the name of the street is not quickly read. This is not a serious fault, however, and may even have a good point, in that it slows traffic somewhat at the intersections.

An interesting installation of signs on concrete lamp posts has been worked out in Palmer Woods, a highly restricted residence suburb of Detroit. Seasoned and weatherproofed oak boards were designed with bronze letters on each side riveted thru to those on the opposite side. These signs are hung on an arm which is rigidly fastened to the metal globe holder on top of the concrete post. An unusual problem devel-



A STREET SIGN AT PALMER WOODS,
DETROIT, MICH.

oped in erecting the signs, due to there being no right-angled intersections in the entire district. The angles were carefully figured, however, so that the name sign on each post should point exactly along the line of the street it designated.

Officials who have such matters in charge are nowadays giving a great deal of thought to the artistic in designing the necessary visible structures along the street. There are numerous instances of improvements of this character thruout the country. The pride in them which is exhibited by citizens is ample evidence that the study given the design is well repaid.

News and Ideas for Commercial and Civic Organizations

Result of Jersey City Chamber's Taxation Referendum

JERSEY CITY, N. J.—As an indication of the trend of public opinion among business men on the subject of taxation, the responses to a referendum submitted by the Taxation Committee of the Jersey City Chamber of Commerce to the business men of New Jersey offer a very interesting study. Two features stand out with particular prominence: first, that throughout the state of New Jersey there is apparently a very strong sentiment among business people against the continuation of a tax on personal property; and, second, that rather than continue this system, business men are willing to submit themselves to the inconvenience of paying a state income tax.

The vote on these two propositions among the business men of Jersey City is indicative of the sentiment throughout the state. Out of the 867 members of the Jersey City Chamber who had an opportunity to vote in the referendum, eliminating the multiples, 425 ballots were returned, and 356 business men voted against the continuation of the personal property tax, while 304 were willing to endorse a state income tax as a substitute means of acquiring revenue.

The eight tax reforms for New Jersey proposed by the Jersey City Chamber of Commerce committee in the referendum, and the vote on each were as follows:

1.—That all taxes on personal property (including machinery, raw materials, stock on hand, investments and accounts) be eliminated from taxation. In favor 356; opposed 68.

2.—That a state income tax be imposed and assessed at a flat rate on all incomes in excess of \$1,000, the federal tax returns being used as a basis, and all revenue being distributed by the state to the various communities in proportion to their final assessed valuations of realty. In favor 304; opposed 86.

3.—That a tax of \$2 be assessed against all persons having an income of more than \$300 who do not pay an income tax, and that the presentation of a tax receipt be made a quali-

fication for voting. In favor 324; opposed 44.

4.—That a license fee at a small fixed rate be imposed on all individuals, partnerships and corporations doing business in the state and having a net income of less than \$1,000, and that in cases where the income tax paid by such individuals, partnership or corporation is less than the license fee, there shall be paid a minimum tax sufficient to make up the amount of the license fee. In favor 274; opposed 40.

5.—That land and improvements (except main-stem railroad property) be taxed at rates fixed by the local authorities on valuations made by local assessors, and that second class railroad property (real estate outside of the main stem used for railroad purposes) be assessed on the same basis as similarly situated or contiguous property used for other purposes. In favor 308; opposed 24.

6.—That the present State Board of Taxation, appointed from the state at large, be superseded by a Board made up of six members appointed one from each two congressional districts. In favor 302; opposed 34.

7.—That tax levies on land and improvements be redistributed by increasing the levy on land and decreasing the levy on improvements at a uniform rate, so that at the end of five years improvements will be taxed at 50 per cent of the rate at which land is taxed. In favor 192; opposed 146.

8.—That exemption from taxation for five years be granted on all improvements used for residential purposes made during the years 1920-1921. In favor 300; opposed 118.

The vote in New Jersey indicated, aside from the general consensus of opinion on the question of the preference of an income tax to a personal property tax, that there was a wide difference of opinion among business men on the virtues of the single tax theory, even when applied in such a mild form as suggested by the seventh recommendation of the Chamber's committee, which was endorsed by a very scant majority.

The principle that representation on state tax boards be determined by congressional districts, or, in other words, that provision be made for direct representation of districts, was apparently a very popular one. The thought that railroads,

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Chicago Park Board, 1 machine
Milwaukee, Wis., 2 machines
Milwaukee, Wis., repeat order, 2 machines
Indianapolis, Ind., 1 machine
Indianapolis, Ind., repeat order, 1 machine
Louisville, Ky., 1 machine
Louisville, Ky., repeat order, 1 machine

Akron, Ohio, 1 machine
Albany, N. Y., 1 machine
Brooklyn, N. Y., 1 machine
New Bedford, Mass., 1 machine
Providence, R. I., 1 machine
Providence, R. I., repeat order, 1 machine
Richmond, Va., 1 machine
Bridgeport, Conn., 1 machine
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**Equipment mounted on any 5-TON
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SPRINGFIELD, OHIO.

aside from their main-stem tracks, ought to bear their fair share of the taxing load in terminal cities also seems to have been generally favored.

The special commission on taxation in New Jersey adopted two of the principles advocated by the Chamber—the elimination of the tax on personal property and the substitution of an income tax—as a part of their report to the Legislature. Unfortunately, the committee's report took the shape of an opinion rather than a bill, and for political reasons there seems to be considerable doubt that the present Legislature will report any bills touching on the tax situation.

The Chamber of Commerce has at the urgent request of its Housing Committee, in coöperation with the city administration, introduced a separate bill covering the eighth recommendation relative to the exemption of taxation for a period of years on buildings put up under present market conditions and intended for residential purposes. The constitutionality of a law of this character has been questioned and legal opinion seems divided on the subject, but there appears to be a good chance of the Legislature's passing the bill and allowing the courts to decide the issue. The outcome of the case will undoubtedly be watched with interest in other states as setting a precedent in relieving housing conditions.

WILLARD G. STANTON,
Manager, Jersey City Chamber of Commerce.

A System of Coöperative Marketing for Rural Communities

HOUSTON, TEX.—The Houston Chamber of Commerce reports interesting results from its work in establishing a system of coöperative marketing among farmers in the Houston territory. One of its greatest benefits has been to the dairying industry in the rural communities, from which daily deliveries of milk and cream are now made in the city. The dairymen receive a good price for the product, and the people of Houston get fresh milk from the farms every day.

This system was worked out after much pioneering on the part of the Chamber of Commerce. It was difficult for many of the farmers to see the benefits that would eventually accrue to them through the coöperative dairy societies. Some of them agreed to try it out, however, and the

results have been highly gratifying.

The use of the private truck lines that formerly served the farmers proved unsatisfactory. The drivers were often autocratic in dealing with the farmers, and their charges for service were far in excess of the coöperative societies' charges. When the weather was bad, the private truck driver often failed to appear and the farmer had no recourse, as the driver was not a common carrier and was not liable to damages for failure to haul freight offered him.

The plan is for each community of farmers to form a coöperative dairy under charter from the state. The capital stock is placed at \$1,000 and upwards. The farmers' society gives its note to the bank for money with which to buy an auto truck to be used in delivering milk and other farm products, and to pay the salary of a driver. The truck is purchased and put into commission. The farmers of the community market all the milk they can produce. They have it ready every morning when the truck calls to take it to the city. The driver markets it and returns from the city with supplies, which include groceries and other household necessities which the farmers have asked him to bring back. For this service the coöperative society charges a nominal freight rate. Passengers are sometimes carried to the city with the truck load of farm supplies. They pay a small fare.

The societies have found that the revenue earned by the truck lines has soon paid for the trucks, also the drivers' salaries, and left a good surplus; the notes given to the banks were paid, and the societies found themselves on a cash basis.

Of course, no great surplus revenue from the truck line is expected. It is established in the first instance as a means of transporting country produce to the city. The farmers are making their money on the produce they send to the city each day, and are satisfied with the profits from this source. The truck lines maintain themselves and earn a small dividend. That is all they are expected to do.

One remarkable development has grown out of this system. When the truck lines were first established, hundreds of farmers kept a few cows, just a sufficient number to supply milk for the family needs; more were of no commercial value as milk pro-



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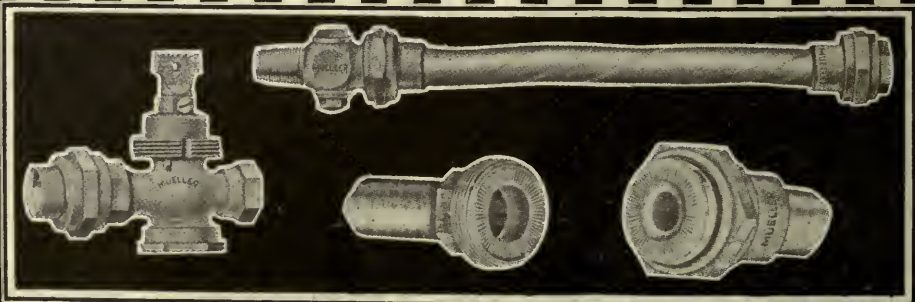
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ducers. When the farmers saw that they had a daily market for their milk, cream and other products, however, they began to add to their dairy herds and increased the production of milk. As a result, the annual revenue from the dairy products in the Aldine community, twenty miles north of Houston, increased from \$7,000 to \$125,000 within three years. Other communities have done equally well. Ten societies have been organized in the vicinity of Houston.

Farmers who wish to increase their dairy herds are aided to do so through the Houston Dairy Loan Fund Association, created for that specific purpose and administered through the Houston Chamber of Commerce. The Association loans the farmer money with which to buy cows, the farmer paying off the note from the revenue received from milk produced by the cows.

The coöperative societies seem to have solved the problems of rural marketing, especially in the vicinity of the larger cities. They have succeeded in adding from 100 to 1,800 per cent to the earning capacity of the various communities served in this part of Texas. The production of dairy products has increased beyond the maximum possible under former conditions.

Three years and a half ago Houston had two small creameries and two ice cream manufacturing plants. To-day there are five creameries, representing a total investment of more than \$1,000,000, and seven wholesale milk dealers who do a general distributing business. In addition, a large brewing concern has been converted into a creamery and milk condensing plant, and it is doing a capacity business.

GEORGE W. DIXON,

Publicity Director, Houston Chamber of Commerce.

A Better Secretaries' Club

SHERMAN, TEX.—In working out problems common to nearly all commercial organization secretaries, ideas frequently come to the Secretary of the Sherman Chamber of Commerce that he would like to share with others, and he often wishes he could have the benefit of his fellow secretaries' experiences in the solution of problems. It occurred to him that if some plan could be devised by which a group of secretaries could exchange ideas, say once in three months, the plan would be a very good means of increasing their efficiency.

The result of this deliberation was the

formation last summer of an organization called the Better Secretaries' Club, the members of which agree to send to all the other members at least once in three months some suggestion or idea, or ask questions which will invoke discussions, designed to cause the other members of the club to become better secretaries. The secretary who fails to do this is to be dropped from the roll. That rule, however, is not to be too strictly observed.

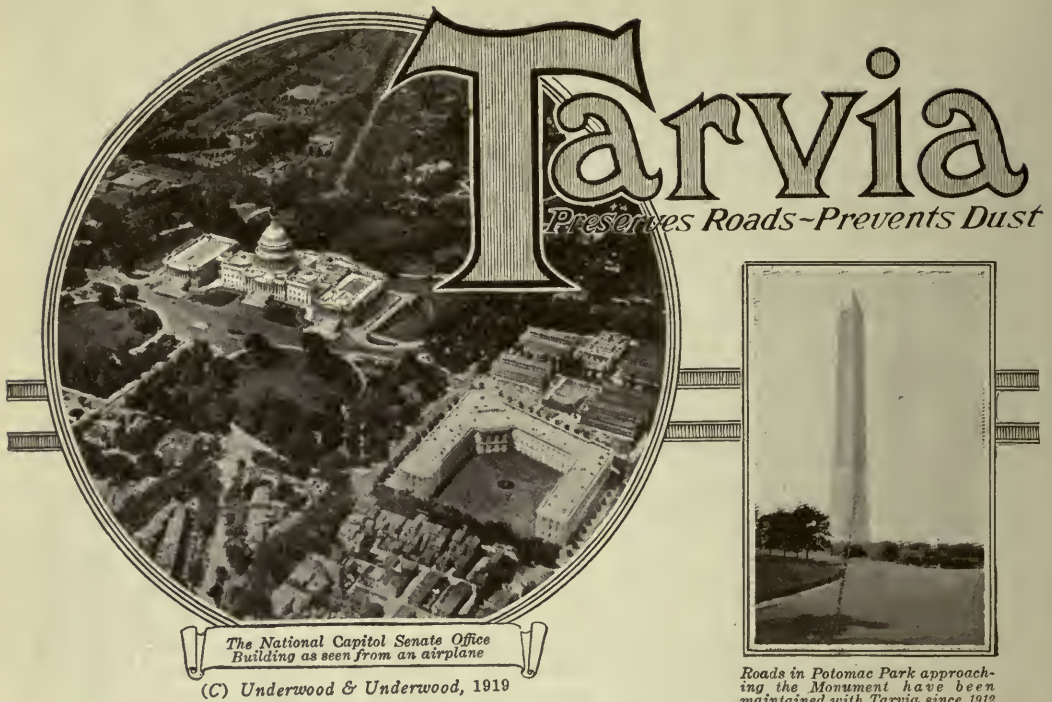
There are no dues in the Better Secretaries' Club. Anyone in the United States engaged in chamber of commerce work, or even interested in it, is eligible to membership. All that is necessary to become a member is for the applicant to send his name and address to the Secretary of the Sherman Chamber of Commerce, enclosing a stamped reply envelope in which to send the applicant a list of the members of the club. Upon receipt of the list, the applicant sends a circular letter to each of the names on it, asking that his name be added to their lists, in order that he may be included when communications are being sent to the other members.

Several interesting suggestions have already been received from the various members. As time goes on and the members become more and more interested, they receive an ever-increasing amount of good from the organization.

JOHN E. SURREATT,
Secretary, Sherman Chamber of Commerce.

Sweet Potato Crop Salvaged by Chamber of Commerce

MARSHALL, TEX.—The farmers in this district raise large quantities of sweet potatoes, which are usually stored in sweet potato curing houses until needed, instead of all being thrown on the market at the same time. Last year, during the digging time of sweet potatoes, excessive rains soaked practically the entire crop. Many of the curing houses would not take the risk of buying or storing these wet potatoes, and the farmers in the county asked the Chamber of Commerce to see if some means could not be provided to help them out. In order to prevent heavy losses on account of these water-soaked potatoes, the Chamber of Commerce, with the help of the Boy Scouts, conducted a "buy-a-bushel" campaign, in which each citizen was asked to buy one bushel of the potatoes for \$1. The



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Preserves Roads - Prevents Dust

The National Capitol Senate Office Building as seen from an airplane

(C) Underwood & Underwood, 1919

Roads in Potomac Park approaching the Monument have been maintained with Tarvia since 1912

Tarvia in Washington



IN 1791, Pierre Charles L'Enfant, a French engineer and a veteran of the Revolutionary War, made the street plan for Washington, D. C. It is interesting to find that this plan of L'Enfant's, generally conceded to be the most complete as well as the most artistic city plan ever carried out, was made and adopted with the approval of General Washington himself.

And today, the broad streets of the Capitol City are usually the first thing that attracts the admiration of the visitor.

Flanked by beautiful buildings

and rows of handsome trees, they average from 80 to 160 feet in width.

Over their smooth surfaces rolls perhaps the heaviest, certainly the most interesting motor traffic in America.

TARVIA plays a big part in keeping Washington streets smooth, firm, mudless and dustless.

The Avenue of the Presidents, Extended, the "show" street of Washington, is a Tarvia road. Built in 1912, this street has been maintained perfectly in spite of the endless stream of motor traffic that spins over the surface.

Executive Avenue at the south front of the White House, built in 1912, is another splendid example

of Tarvia construction. It carries the heaviest motor traffic of any street of its width in Washington.

The roads leading to the War College, the State, Navy and War Department Building and to many other busy Government centers, are Tarvia roads.

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TARVIA is a coal-tar preparation shipped in barrels, tank-wagons or tank-cars, depending upon the size and location of the job. No matter what your road problem may be—whether you require a road binder for new construction, a dust preventive, a road preserver or a patching material—there is a grade of Tarvia made for the purpose.

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			Vancouver	St. John, N. B.	Hallifax, N. S.
				Sydney, N. S.	

press gave the matter wide publicity, and one Saturday morning fifty young "solicitors" started forth with order blanks and a supply of "honor cards" reading, "We've bought our bushel. How about you?" to be tacked on all the houses whose occupants had bought any of the potatoes.

Large quantities were disposed of in this way. Forty telegrams and sixty letters were sent to all the markets within a radius of 500 miles of Marshall in an effort to secure orders that would make it to the advantage of the farmers to sell. Prizes were awarded to the boys who brought in the largest number of orders, and as an additional treat, they were taken on a possum hunt.

A great deal of interest was manifested in the campaign. The Chamber's efforts resulted in disposing of nearly 3,500 bushels of sweet potatoes at good prices, and, incidentally, the Chamber made a great many friends among the farmer folk.

SAM H. FOWLKES,
Secretary, Marshall Chamber of Commerce.

The "Welcome to Lockport" Organization

LOCKPORT, N. Y.—It is anticipated that the operations of the Lockport Homes Company, which expects to build a million dollars' worth of homes in Lockport the coming summer, will result in bringing many new families to the city. In order that the newcomers may be made to feel at home and have a real desire to become permanent residents of the city, a Welcome to Lockport Committee has been appointed by the Board of Commerce to welcome the strangers and introduce them into the circles in which they have been accustomed to move.

The committee has formed an organization consisting of two divisions, the Information Division and the Introducing Division. The Information Division is made up of representatives or agents, one in each factory, store or place of business where any considerable number of people are employed, who report to the central office in the Board of Commerce the names of all newcomers and other necessary information concerning them. The agents are supplied with two cards, one, a 4 x 5 card, bearing the official welcome, enclosed in an envelope, and the other a 4 x 6 card, used for recording the information received.

The newcomers are first handed the of-

ficial welcome card, which they are to keep. This card reads:

We take pleasure in welcoming you to Lockport; may your life here be long, pleasant and prosperous. We hope you will like the city. We do, and feel sure that you will just as soon as you come to know it.

All too frequently people are allowed to come into a city and drift around for months before getting acquainted. We try to avoid this in Lockport and we want to see that you do not experience a single lonesome moment.

WELCOME TO LOCKPORT COMMITTEE.

The data called for by the information card is obtained at the time the welcome card is presented to the individual. The information card reads as follows:

WELCOME TO LOCKPORT

Name
Local Address
Home Address
(City left to come to Lockport)
Married Age..... No. Children.....
Single
Nationality
Religious Affiliations
Fraternal Affiliations
Athletic Activities
Civic Activities
Other Activities
(Also special interests of wife and family)
Date.....Employer

The Introducing Division consists of an agent in every church, lodge, fraternity, society and club (civic, literary, athletic, or whatever it may be), whose duty it is to introduce the newcomers. The Information Division sends the filled-out cards of information to the central office, which in turn notifies the agents of the Introducing Division, who call upon the newcomers and see that they are made to feel at home.

Since the growth and prosperity of a community depends upon the interest the citizens take in its affairs, the Board of Commerce hopes that the result of interesting strangers in the city from the beginning will be increased growth and prosperity for Lockport.

E. D. BEVITT,
Secretary, Lockport Board of Commerce.

Honorary Membership for Members Who Have Moved Away

HUDSON, N. Y.—Under a method being put into operation by the Hudson Chamber of Commerce, a certain number of former members of the Chamber who are now living in other sections of the country, and who are still interested in this community, will be placed on the rolls of the organiza-

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Whether used in the city street, the country road or state highway, Newport culverts give dollar for dollar service. In all the years we have been making these durable culverts, we have yet to receive a complaint regarding unsatisfactory or defective service. However, we have received dozens of letters complimenting us on the merits and the lasting qualities we have put into our products

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tion as honorary members. They will receive all the publications and any special information issued to the regular members by the Chamber of Commerce from time to time, and in return will be asked to aid the town, which was perhaps their birthplace, by transmitting to the Chamber information concerning commercial and business opportunities which might interest the organization, as well as any suggestions that occur to them or plans with which they become acquainted and which they believe could be profitably introduced in Hudson through the Chamber of Commerce.

The Hudson Chamber has an active membership of 585, and it is planned to place about half that number of names on the honorary membership list at first, increasing the number as time goes on and circumstances warrant. It is believed that offering honorary memberships to these ex-residents will help greatly to retain their interest in the city and that the organization will be considerably benefited thereby.

L. S. DOUGHERTY,
Secretary, Hudson Chamber of Commerce.

Two Important Receptions Held by Albany Chamber

ALBANY, N. Y.—On the evening of February 10 the Albany Chamber of Commerce gave a reception to Governor Alfred E. Smith, the members of the New York State Legislature, and all the state, county and city officials. It was so successful that

it is likely to be continued as an annual function. Every guest declared that the reception was delightful. The absence of all formality helped to make it so.

The affair was held in the gold ballroom of the Ten Eyck Hotel, which was appropriately decorated for the occasion. In the receiving line with the President of the Chamber, Charles M. Winchester, were the entire Board of Directors, the Governor, the Lieutenant Governor, Speaker Sweet of the Assembly, the Chairman of the Board of Supervisors, and Mayor James R. Watt. Excellent music was furnished by an orchestra, interspersed with vocal selections. A buffet luncheon was served during the evening.

The Governor made an interesting speech, in which he paid a strong tribute to the importance and efficiency of chambers of commerce in general, the large part they play in community life, and complimented the Albany Chamber of Commerce particularly. The reception did much to cement the good feeling existing between the state, county and city officials and the Chamber of Commerce.

A little over two weeks later, on February 27, the Chamber tendered a reception to General Pershing. On learning of the General's intended visit to Watervliet, six miles from Albany, on a trip of inspection to the United States Arsenal, the Albany Chamber invited him to come to Albany and be



ALBANY CHAMBER OF COMMERCE PAYS TRIBUTE TO GENERAL PERSHING



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Dependable Pneumatics

"OUR truck weighs 9,000 pounds and we equipped with Goodyear Cord Tires in June, 1917. These tires hardly show any wear at all, and they look good for at least three or four more years of service. To my mind the big pneumatics are the proper equipment for a fire truck. Their cushioning and traction enable us to drive faster with a greater margin of safety over either paved or unpaved streets. Our truck steers and rides easy and seems to smooth out some of the raised sidewalk crossings, handling this even better than most passenger cars."—W. G. Alexander, Fire Chief, Butte, Montana

The reliability of Goodyear Cord Tires on fire trucks is frequently evident in letters like Mr. Alexander's of the Butte department.

Dispelling all doubt, the big Goodyear Cords consistently roll up mileage records that equal and often exceed those of solid tires.

Their strength is evident in a powerful construction that enables them to cushion the truck from breakage during terrific impact and rebound.

Their toughness is evidenced in their ability to hold the swaying, lurching, speeding fire truck from skidding on streets and turns.

In every way, Goodyear Cord Tires on fire trucks are proving better than any other type of tire; they protect our good name.

Long mileage records, truck economy records, and proof of the traction and cushioning of Goodyear Cords can be had by writing to The Goodyear Tire & Rubber Co., at Akron, Ohio.

GOOD YEAR CORD TIRES

the guest of the organization. Governor Smith and Mayor Watt extended the welcome of the state and the city to the General on this occasion. The General responded fittingly. More than 15,000 attended the reception, nearly all of whom had an opportunity to shake hands with him.

General Pershing's great love for children was demonstrated when he spied a youngster in the receiving line. "Well, my little man, what is your name?" was the question put to the child by the General. "Tom Moore," was the quick rejoinder. "I wanted to see you, so I skinned in." A shout went up from the crowd. The General shook the boy's hand and laughed at his enthusiasm.

An interesting feature of this reception was a group photograph taken with General Pershing seated in President Winchester's chair, the Governor, the Mayor, President Winchester, and other members grouped around the desk, and reproduced herewith.

ROY S. SMITH

Executive Manager, Albany Chamber of Commerce.

Transportation Ruling Which Saves Time and Money for Winnipeg Shippers

WINNIPEG, MAN.—The method of shipping and receiving goods in Winnipeg is different from that of the average American city. In Winnipeg the shippers handle all their less than car lot freight by vehicle, the work being given to the established cartage companies, one of which operates exclusively in connection with each of the several rail lines centering in the city. This practice ordinarily gives the cartage companies an assured revenue, enables the railroads to keep their sheds clear, and gives the merchants more prompt delivery of incoming goods and every facility for moving the outgoing.

The cartage rates have been advanced from time to time in the last two or three years in accordance with the increased cost of feed, labor and material, and last fall the shippers were confronted with the prospect of further advances. The Winnipeg Board of Trade was asked by the cartage companies to make an investigation of the situation, with a view to bringing about an understanding among the railroads, the merchants and the cartage companies. The Shippers' Bureau of the Board of Trade

conducted an investigation, to determine what advances, if any, were necessary to enable the cartage companies to carry on effectively and whether the increased rates would be offset by much improved service.

The investigation revealed the fact that a number of shippers were in the habit of detaining the railway cartage teams unduly, giving preference to their own equipment, or to hired vehicles, which were engaged by the hour or day. This could easily be done without loss to the shippers, as the railway company's cartage charge was based entirely on the weight of the load, the same price being received whether the team was kept one hour or five hours in taking or delivering any particular load. Figures were produced showing the periods of detention for all the teams. The Bureau was surprised to find that the practice of delaying teams was rather widespread.

It was decided to ask the cooperation of the shippers and receivers of freight to the end that the service be improved and the cartage companies get not only the full use of their equipment, but the earnings from those teams that had been delayed an hour here and two hours there every day.

The shippers realized that they had been at fault to a certain extent, but they also realized that for any improvement to be permanent, provision should be made for a penalty for breach of faith. After several conferences with the shippers, the following set of rules was evolved:

RAILWAY FREIGHT TRANSFER VEHICLE- DETENTION RULES

On account of the unprecedented high cost of operation and owing to some shippers and consignees continually delaying Teams when delivering or picking up freight, it has been found necessary to introduce some method by which unnecessary detention may be prevented and improved cartage service rendered.

Rule 1—Outward and Inward Shipments

Teams will be sent to Shippers' Warehouse by the Transfer Company as soon as possible after order has been received. Inward shipments will be delivered with all possible dispatch after arrival.

Rule 2—Computing Time

Time should be set by agreement as to when shipments will be ready for loading. Time lost to the consignor or consignee through any defect of the Transfer Company's equipment will be added to the free time allowance. Where differences occur in computing any time or delays, same shall be referred to the Board for adjustment.

Rule 3—Free Time Allowance

The following schedule will apply:—Shipments of 1,000 lbs. or under, 15 minutes free time. Each additional 1,000 lbs. or portion thereof, 10 minutes additional free time. Maximum for vehicle load, 45 minutes free time. Where delays occur, the Shipper will certify Teamster's card showing time of arrival and departure.



KELLY SPRINGFIELD CATERPILLAR TIRES

Their biggest asset is their marvelous resiliency; their greatest work is the saving of the truck.

Their unusual depth of rubber and patent-protected system of side tents enable Kelly Caterpillars to absorb road shocks and save the engine and chassis from being pounded to pieces. The life of the truck is lengthened and its earning power increased proportionately.

And saving the truck is not the only thing Kelly Caterpillars do. Their construction gives them traction qualities that are not equalled in any other truck tire made, and when it comes to mileage, the average performance of the average Caterpillar is well above the 15,000 mile mark.

Kelly-Springfield Tire Co.

New York, N. Y.

Rule 4—Detention Charges

Detention charges will be in effect after expiration of free time, and the following charges will be made:

TEAMS

50c. for each 15 minutes or fraction thereof

MOTOR TRUCKS

75c. for each 15 minutes or fraction thereof

Rule 5—

Should payment of detention charges, properly due under these Rules, be disputed, such dispute will be referred to a Board of Adjustment, which will be comprised of one representative of each of the Railway Cartage Companies together with the Secretary of the Canadian Manufacturers' Association and the Traffic Manager of the Winnipeg Board of Trade. The decision of this Board will be final, and if the consignee or consignor refuses to abide by its decision, no further vehicles shall be furnished for loading or unloading by any Cartage Company signing these Rules until satisfactory settlement has been effected.

Rule 6—

Where delays occur due to strikes, riots, storms, etc., where the offending party has no control, detention charges under such circumstances would not apply.

Rule 7—

For the proper operation of the foregoing Rules, Teamsters will present on arrival and departure their Time Card for certification by Shippers' representative.

This Tariff applies to the Railway Cartage Companies subscribing to same, as below:

MANITOBA CARTAGE & WAREHOUSING COMPANY, LTD.

J. Lemon, Manager

CANADIAN NORTHERN TRANSFER COMPANY, LTD.

F. Herron, Supt.

CANADIAN EXPRESS COMPANY

Cartage Dept., F. Norman, Supt.

MIDLAND RAILWAY CARTAGE COMPANY

I. M. Winslow, Manager

WINNIPEG, Sept. 1st, 1919.

Should a railway cartage team be delayed beyond the time allowed for loading or unloading, the cartage company is compensated at an hourly rate, which is on a paying basis. This charge is in addition to the regular cartage charge. The new arrangement went into effect on September 1, and has proved most satisfactory from the point of view of the shippers, the railways and the cartage companies. The detention of teams has practically ceased and they have thus been made available for the constant moving of goods to and from the freight sheds. The shippers found that they could speed up their shipping staffs somewhat, and the railways have been able to keep their sheds clear through the use of the released equipment.

An analysis of the operations of the cartage companies since the new arrangement went into effect shows from 15 to 18 per cent increased efficiency, with which they appear to be

satisfied without resorting to the proposed increased cartage rates.

A comparison of the rates in Winnipeg, where the cost of labor is higher than in many of the eastern Canadian cities for the same service, with the rates in those cities, shows that lower cartage rates prevail in Winnipeg and that the Winnipeg teamsters are paid 15 per cent higher wages.

PERCY G. DENISON,

Manager Transportation Division, Winnipeg Board of Trade.

How Greenville, Miss., Sold the Idea of Paved Streets

GREENVILLE, MISS.—The citizens of Greenville on February 27 voted 424 against 9 in favor of an ordinance which allows the city to spend \$100,000 more for street paving. This was the second of two paving bond issues voted recently. The two issues give the city a total of \$600,000 for paving, so that Greenville is well on the way to be lifted out of the mud.

The circularizing, telephoning, personal visits, billboard advertisements, public meetings, and the slides shown in the moving picture theaters were all helpful in bringing this campaign to a successful conclusion, but the line of argument that did the most to convince the citizens of the reasonableness of the project was that contained in the advertisement (reproduced on page 523) that was published in the local paper on the eve of the election.

NED HOLMES,

Secretary, Greenville Chamber of Commerce.

DISCOUNTS ELIMINATED

THE RETAIL STORES RECOGNIZING THE RAPIDLY GROWING PUBLIC SENTIMENT FOR AN EQUALITY OF PRICES TO ALL PATRONS, AND THE WISE ECONOMIC PRINCIPLE THAT THE FEW ARE NOT ENTITLED TO PRIVILEGES AT THE EXPENSE OF THE MANY, WILL, BEGINNING JANUARY 1, 1920, DISCONTINUE THE GIVING OF DISCOUNTS ON ALL RETAIL SALES.

This means the elimination of all Retail Discounts, including those given to Dressmakers, Teachers, Nurses, Purchasing Agents, Tailors, Milliners, Furriers, Peddlers, Barbers, Ministers, Superintendents, Buying Clubs and Associations, Social and Fraternal Organizations, Rooming and Boarding Houses, Upholsterers, Paper Hangers, Interior Decorators, Painters, Merchants and all Professions.

This, however, will not interfere with Discounts or Special Prices to the following wholesale purchasers—Branches of the Government, Public Institutions, Charitable Organizations approved by the Endorsement Committee of the Providence Chamber of Commerce, Churches, Convents, Sunday Schools, Hotels, Apartment Houses, Restaurants and Clubs; or to our own employees for their personal needs.

Special prices may also be made for extensive house furnishings or other contracts, but in such contracts there should be no deviation from Retail prices for purchases under \$500.00; if over, then at a reduction of not more than 10% from the Retail prices.

In the case of the Boston Store's Wholesale Accounts with peddlers, and others who buy goods to re-sell, it is agreed that no discount or special prices will be given to them on purchases made in the retail departments of that store and that the Boston Store will not sell to Dressmakers in its Wholesale Departments.

RETAIL MERCHANTS DIVISION

The Providence Chamber of Commerce

A Few Poignant, Pithy, Pertinent Paragraphs To The SLACKER, The BACK NUMBER and The GOOD CITIZEN Anent PAVED STREETS

MR. SLACKER: You can not pass the buck tomorrow and not vote, then offer the alibi afterward that you were "busy," "forgot" or "out of the city."

You are expected to be BUSY—for about five minutes, voting YES for the \$100,000 Bond Issue for Paved Streets.

You had better not FORGET, because of the disdain with which you will be regarded by your fellow citizens who believe that "nothing is too good for Greenville."

You will not be able to be OUT OF THE CITY, because all the exits will be guarded by zealous watchers, who mean to corral every qualified voter in Greenville and keep tab on him until he casts his vote.

MR. BACK NUMBER: You have been heard to say that "there aint no sense in wasting the public's money on paved streets. The mud was good enuf for my daddy and it's good enuf for me."

ISN'T IT A FACT, MR. BACK NUMBER, THAT YOU HAVE ALWAYS HELD FAST TO YOUR OLD-FASHIONED DISCOMFORTS UNTIL YOU WERE ACTUALLY FORCED TO LET GO? WHEN DID YOU EVER FAVOR AN INNOVATION THAT EVEN SUGGESTED ADVANCEMENT?

You had no use for the railroad, because you believed that traveling at a speed of thirty miles an hour would stop the circulation of the blood.

You opposed the steamboat, and when Brunel drove the first steamboat on the Thames you made him so unpopular that the London hotels refused to give him a room.

You said there was no demand for the sewing machine, and the first machine that Howe put on exhibition in Boston was smashed by a mob.

You made Morse plead and beg for his telegraph at ten different Congresses before he received any attention.

You called Westinghouse a fool when he asserted that he could stop a train with wind.

You sneered at Murdoch for trying to introduce gaslight, and laughed yourself sick at the claim that there could be a lamp without a wick.

You thought the reaper was the craziest device ever developed by the brain of man, and McCormick had to preach his gospel of efficient harvesting for fourteen years before he sold his first one hundred machines.

You dubbed the telephone "a scientific toy," and Bell had to go down on his knees before the public paid in its first 20-dollar bill, and that was only thirty-six years ago, yet the telephone business of today represents fifteen hundred millions of capital.

You jeered at "Hank" Ford for trying to make a vehicle go without a horse or mule, and today "the sun never sets on the Ford."

You opined that the "movies" would ruin everybody's eyesight, and today they are viewed by all the peoples of the earth, yet the first case of loss of eyesight has still to be reported.

You ridiculed Langley into his grave for daring to emulate the birds, and along came the Wright brothers, whose names will be known to mankind for eons after yours has been forgotten.

YOU NEVER WERE VERY STRONG FOR ANY WORTH-WHILE INNOVATION, AND, ALTHOUGH YOU PROBABLY DO NOT REALIZE IT, MR. BACK NUMBER, YOUR OPPOSITION TO THE \$100,000 BOND ISSUE FOR PAVED SREETS IS THE ONE GREAT, BIG DOMINATING FACTOR WHICH IS GOING TO MAKE PAVED STREETS AN ACTUALITY RIGHT HERE IN GREENVILLE, AND YOUR FELLOW-CITIZENS THANK YOU.

MR. GOOD CITIZEN: Everybody knows where you stand, God bless you! If a plague were to visit your beloved city, a conflagration consume it, a cyclone sweep down upon it, a flood overflow it, so that there would be only a few feet of green earth left, with a tumble-down shack upon it, there you would be found standing, proclaiming to all the world, "GREENVILLE GROWS GREATER DAY BY DAY." All your fellow citizens have to ask of you tomorrow is, that you

**Vote Early and bring at least one other Qualified Voter with you.
Lift Greenville Out Of The Mud**



Free Book on Sewer Cleaning

THIS seventy-two page book including dozens of photographs will be sent free of charge to all those interested in sewer cleaning work. The problem of sewer cleaning is one which confronts the people of every city. The Turbine Sewer Cleaning Machine has effectively solved the problem. It makes little difference how severely clogged up a sewer may be—the Turbine will clean and scour it and make it like new. Our work is guaranteed—you take no chances.

*Send us your address for our
free book on sewer cleaning.*

Turbine Sewer-Machine Co.
195 ELEVENTH ST. MILWAUKEE, WIS.

Swimming Pool Sanitation

By Arthur M. Buswell, M. A., Ph. D.

THE importance of some systematic procedure for the control of the bacterial content of swimming pools will certainly not be questioned by any enlightened person. The numerous cases of eye, ear and nose infections from improperly controlled swimming pools are too well known to require citation. Among what should be our most progressive communities—the college communities—from 25 to 50 per cent of the swimming pools are without proper sanitary control, according to data accumulated by means of a questionnaire by Howe and recently published. The following extract from Howe's paper, which appeared in the *Journal* of the American Public Health Association, is of interest in this connection:

"Three-quarters of the pools are disinfected, and in more than half, the water is filtered. In almost exactly half, both chemical treatment and filtration are used. Sixty-seven per cent of the pools are reported to be examined in regard to the sanitary condition of the water. Of these reports, 20 per cent fail to say how often, 16 per cent say 'irregularly,' while the other replies vary from 'daily' to 'once' and 'every two or three years.'

"It is scarcely possible to classify the replies to the question 'standards set.' A third of those making a sanitary examination are silent on such standards. The rest cover a wide range of requirements, one going so far as to stipulate 'no pathogenic germs.' Three-quarters of the replies state that the bottom of the pool can be clearly seen in all lights. In no case when women are using the pool is an unlimited number allowed in the water at one time. Safety demands regulation of numbers for both men and women, the presence of a trustworthy guard, and good visibility of the bottom of the pool."

The available methods for the control of the bacterial content of swimming pools may be divided into two classes: (a) intermittent disinfection; (b) continuous dilution with fresh or treated water.

Intermittent Disinfection

Experience has shown that it is difficult to bring the attendant who adds the disinfectant to realize the importance of thoroly mixing the chemical thruout the pool. In order to obtain any degree of bacterial efficiency by this method it is

usually found necessary to add a comparatively large amount of disinfectant.

Continuous Dilution

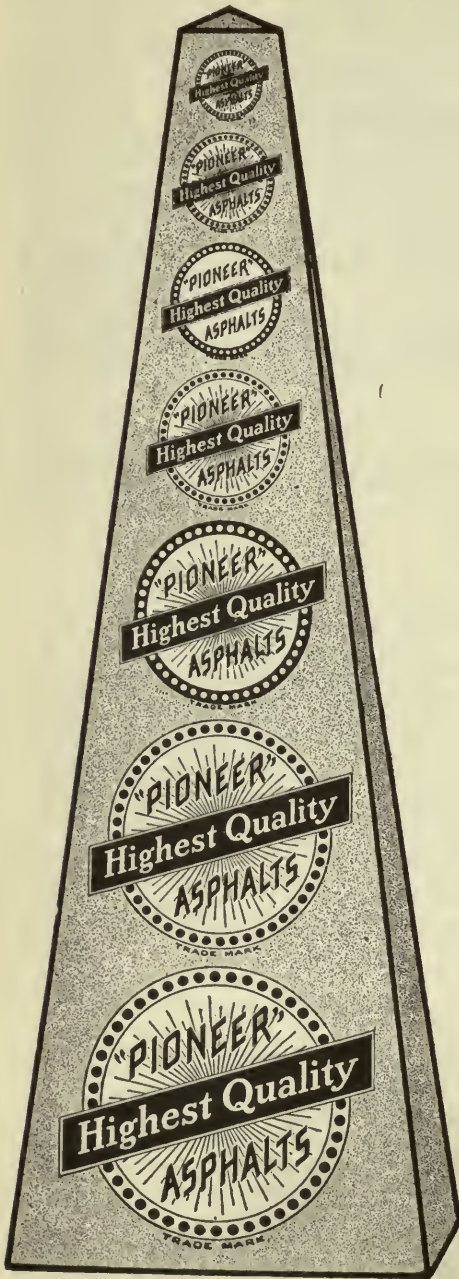
The continuous-dilution method is carried out by pumping the water from the pool through the purification apparatus and allowing it to flow back into the pool again. The rate of flow is gauged so that the dilution is always sufficient to keep the bacterial content below a certain set standard. For instance, by circulating at such a rate that the entire volume of the pool was purified every two days, the author was able to keep a large college pool continuously in condition to pass the standards set by the U. S. Department of Agriculture for the sanitary condition of bottled waters, altho it must be stated that the control of the dilution was very carefully followed and the bathing load was light, or, the number of bathers actually using the pool was limited. The standard is quoted here:

1. The total number of bacteria developing on standard agar plates, incubated 24 hours at 37 C., shall not exceed 100 per cubic centimeter; provided that the estimate shall be made from not less than two plates, showing such numbers and distribution of colonies as to indicate that the estimate is reliable and accurate.

2. Not more than one out of five 10 cc. portions of any sample examined shall show (by the method of the Public Health Service) the presence of organisms of the bacillus coli group.

It may be argued by some that dilution is not a satisfactory means of bacterial control, that a continually sterile pool body is the only satisfactory condition. Complete sterilization of the swimming pool body, however, is impractical, if not impossible, since to maintain a swimming pool continuously in a sterile condition would necessitate a very high concentration of the disinfectant. The dilution method has long been considered satisfactory by sanitarians.

It is generally admitted that either frequent refilling (every 24 to 48 hours) or recirculation with filtration is necessary to maintain a safe degree of visibility in swimming pools, aside from sanitary considera-



A MONUMENT TO QUALITY

"PIONEER" EXPANSION JOINT COMPOUND

Equipped with the newest and most up-to-date machinery for producing paving joint compound we are able to give a better product and better service than ever before.

You simply cannot make a mistake in using PIONEER Expansion Joints in your work. They are made of pure asphalt and are 100% efficient.

Write for samples and prices.

HERE'S A NEW ONE

"PIONEER" RUBEROAD CEMENT

A new product that will interest every Engineer and Contractor. Just the thing for repairing cracks in concrete roads, and for making cold patches in all kinds of asphalt construction.

It Is New—It Is Different
It Is Efficient

The Pioneer Asphalt Co.
Lawrenceville Ill.

tions. When the cost of refilling with its attendant heating is balanced against the cost of recirculation plus the interest on the money invested in the plant, the difference, with the exception of a few isolated cases, will always favor recirculation.

The long experience with filtration of water-supplies in this country has shown that filtration alone is not a sufficient means of purification, and that some means of disinfection must also be employed. Filtration alone has also been found insufficient to control the bacterial content of swimming pools. For the disinfection of the filtered water before returning it to the pool, various chemical disinfectants, such as hypochlorite, chlorine, etc., may be employed with a degree of satisfaction if their administration is carried out under strict

technical supervision. There are two difficulties which arise when using chemical disinfectants, namely: (1) too much of the disinfectant may be added, causing odor and irritation; (2) too small an amount may be added, leaving an unsatisfactory sanitary condition. These two difficulties are a natural consequence of the fact that the administration of chemical disinfectants must be done under skilled and reliable supervision.

The "ultra violet ray" method of sterilization is in use in many pools. The simplicity and uniformity of operation make skilled supervision unnecessary. No chemical is added to the water, so that a sterilizing "dose" can always be used without causing odors in the water nor irritation of the eyes and noses of bathers.

The Relation of Fire Prevention to Sanitation

By D. B. Clark

Fire Marshal, Beaumont, Texas

THE office of fire marshal is comparatively modern, but its importance is universally admitted and its usefulness is daily growing larger, in proportion as the occupant realizes the responsibilities which rest upon him in protecting people and property from fire, the most destructive element in all the world, unless it be its one mortal enemy, water.

In considering the subject of the relation of fire prevention to sanitation it must be appreciated that in taking all possible means to prevent fires we are necessarily observing all the rules of sanitation. But it may just as well mean that by observing all the modern rules of sanitation we shall thereby find that we are following the rules laid down for the prevention of fires. It seems to the writer that sanitation and fire prevention go hand in hand; each makes for the betterment of mankind, not only financially, but morally and socially as well.

In the matter of health, we mark the man who is unclean. We fight the encroachments of disease everywhere and in every way. That battle is showing wonderful results, and our public health is better than that of the Old World. The analogy between the two dangers is complete. If the man has a contagious disease he is quarantined, he is prevented by law from exposing others to infection; he is segregated, treated, and usually cured. At any rate, he is not allowed to menace the health of the people. Disease and fire have a common cause—dirt and carelessness. They have a common cure. Every man is as morally obligated to keep his place of occupancy clean and free from fire dangers as he is to keep his body free from disease. The individual must assume this personal obligation—and, by his attitude towards others, create a public sentiment against the man who is threatening the public welfare by his carelessness.

BOWSER

ESTABLISHED 1885

The Symbol For—

**Convenience
Efficiency
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Service
Safety**

In Handling Oil and Gasoline

S. F. BOWSER & COMPANY, Inc.

Fort Wayne, Indiana, U. S. A.

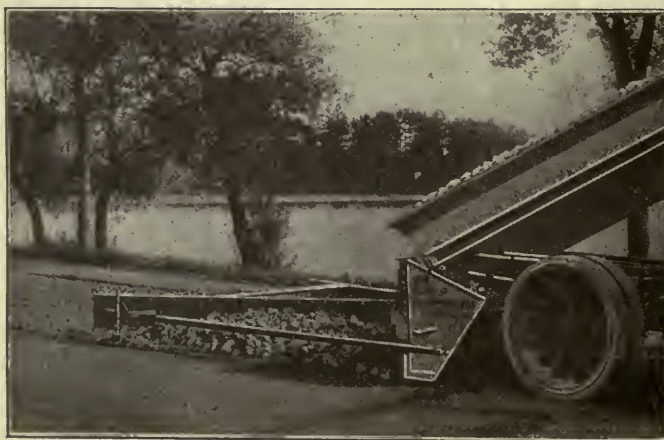
S. F. Bowser Company, Ltd.
Toronto

S. F. Bowser & Co. of Texas
Dallas

Offices in Principal Cities of the World



On a Two Mile Contract



you can save in labor,
time and material to pay
for this

BURCH STONE SPREADER

and on every contract
thereafter it will add
greatly to your profits.

Handles any size stone
for road building. Elim-
inates guesswork and re-
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Most successful contract-
ors say it is indispensa-
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*Write now for descriptive literature regarding this and the Burch
Stone Unloader—another money-saving, profit-making Burch product.*

The Burch Plow Works Co., Dept. Crestline, Ohio

Prevailing Methods of Garbage Collection and Disposal in American Cities

Part I

By Thomas F. Moore

Secretary, Chamber of Commerce, Waterbury, Conn.

EDITORIAL NOTE:—*A committee of the Waterbury Chamber of Commerce has made an extensive and intensive research into the problems of collection and disposal of municipal waste. Questionnaires covering the matter in detail were mailed to about two hundred cities throughout the nation. Typical instances of successful systems in other cities were visited and inspected. In addition to this general survey, a study was made of local conditions for the purpose of adapting to Waterbury's needs those successful features which characterize the methods of other cities. The following is a summary of those portions of the report which are general in application and which will be of value to other communities.*

THE term garbage is correctly used to denote animal and vegetable waste resulting from the preparation of food for consumption and the discarding of the residue.

Chemical analysis of typical specimens of garbage shows it to contain approximately 80 per cent vegetable matter, 15 per cent animal matter, and 5 per cent foreign material. Of this the animal and vegetable material is about 66 per cent water, more in summer than in winter. The quantity of garbage produced per capita annually varies with the climate and the nature of the community, but 190 to 200 pounds is a satisfactory average and approximate estimate.

City	Population (1917)	Annual Amounts Produced, Tons	Per Capita per Year, Pounds
Boston	768,000	60,000	156
Bridgeport	172,000	18,000	209
Dayton	129,000	16,000	248
New Bedford.	120,000	11,500	192
Scranton	149,500	14,000	187
Springfield ...	108,000	12,000	222
Total	1,446,500	131,500	1,214

Average per capita production per year, 202 pounds.

Garbage weighs between 1,100 and 1,400 pounds per cubic yard, with 1,250 pounds per cubic yard as an average. Although the constituents of garbage vary considerably throughout the country, such items as weight, per capita production, and chemical analysis are surprisingly constant.

A period of twelve hours will pass before fresh garbage is subject to any change. After this, alcoholic fermentation begins, and it continues for the same length of time. If there is some exposure, acetic acid

fermentation arises, otherwise the alcoholic fermentation will continue for a day and a half, and then action ceases. Decomposition of garbage is of two types, because of the fact that both animal and vegetable matter are constituents. Fermentation, characteristic of vegetable matter, is due to the carbohydrate content, while putrefaction is the decaying of proteins and fats in animal matter. Garbage in the can, closely covered, is subject to fermentation alone, the putrefaction being prevented by fermentation, but when exposed, both processes will arise. The odor of garbage comes from the fermentation. The real danger attached to exposed garbage lies in the fact that it affords an ideal breeding place for larvae and disease germs of all sorts, especially for flies, which are carriers of disease.

Importance of Correct Solution of the Garbage Problem

Intensive grouping of people, such as exists in our modern communities, requires additional safeguards for health, sanitation, and convenience. One of the earliest developments of this situation in cities was the elimination of promiscuous methods of garbage collection and disposal, and the unification in a system that would be universally protective. It is but natural that people of the present day should neglect to question the relative importance of existing forms of community action or the order in which they were instituted, and for this reason the problems of garbage collection and disposal are not widely understood. And yet, because of the im-

Make Streets Clean

"Studebaker Model"

FLUSHING and SPRINKLING UNITS



Forty feet from curb to curb—sand filled brick pavement—cleaned in one trip with three nozzles.

The machine has four nozzles which can be used discharging one, two or three flushing streams at the same time.

Removing the heavy accumulation of Winter or the lighter dirt of Summer is within the range of this machine due to the adjustable nozzles and the independent control of the pressure.

A horse-drawn uniform pressure flusher is provided where conditions do not justify investment in a motor flusher but where economical, efficient and sanitary cleaning is desired.

Inquire of any motor truck manufacturer or ask the truck dealer in your city for complete information on "STUDEBAKER MODEL" flushing and sprinkling units mounted on their trucks, or address

Municipal Supply Company

South Bend, Indiana

portance to health and convenience, community action pertaining to garbage antedates most of those forms of concerted activity and embellishment which the progress of civilization has produced and brought under municipal control.

Scrupulous handling of the garbage situation is of fundamental significance in any community which has assumed the proportions of a city. It is a vital question of "health at any cost," and should receive due consideration before many other matters requiring public expenditure. There is no room for argument against an honest appropriation for the most practical and sanitary method of garbage collection and disposal as a safeguard against epidemics and other obstacles in the way of public health and comfort.

The General Problem

The community garbage problem is logically divided into two phases: 1, collection; 2, disposal. Each of these constitutes an intricate matter in itself and is dependent upon the other. It is difficult to propose definite rules for cities of a certain size, because of the necessity of interpreting the various methods in terms of local conditions and of adapting the universal principles to the particular case. A survey showing many applications of the various systems in use throughout the country will, however, suggest many possibilities and problems for any particular community.

Types of Collection

There are three typical systems of garbage collection prevailing among American cities, classified as follows:

1. Municipal collection, by which the municipality with its own equipment and working force attends to the collection.
2. Contract collection, by which the city pays a party or corporation for collecting the garbage. In some cities the contractor is permitted to charge the householders a fixed amount.
3. Scavenger system, whereby certain individuals are permitted, under license or regulation of the health department, to collect the garbage in defined areas of the city.

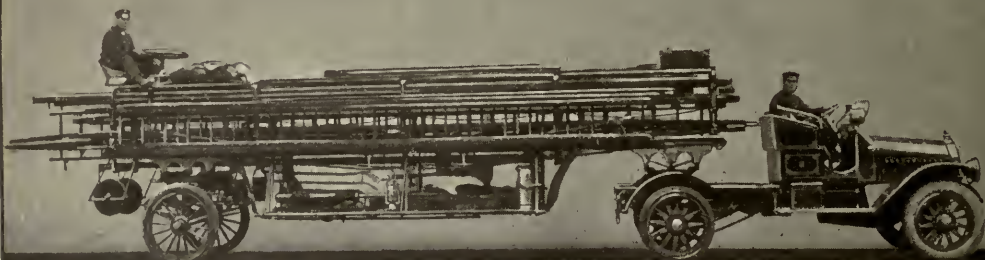
Various combinations of these different types are found in some American cities, for historical, political or practical reasons, but the majority of representative municipi-

palities have now set themselves toward one or another of the three.

The scavenging system, or collection by license, as it is sometimes called, is, as a rule, impractical for large cities because of its unwieldy nature through lack of centralized organization, but its existence in communities of less than 25,000 population may be marked by satisfactory sanitation and efficiency. Its success, however, in any case depends upon the number of collectors licensed and the enforcement of regulations and ordinances; the fewer the licensees, the more easily is their collection supervised, and the dangers to public health confined and safeguarded. The scavenging method is generally linked with the hog-feeding method of disposal, the scavengers being allowed to retain the garbage collected and feed it to hogs on their farms. This necessitates constant and widespread inspection of their hog farms, in regard to sanitation and the inoculating of their animals. The great danger from these farms as disease-breeding centers arises from the presence of pigs, cows and other stock animals at the one place; disease is easily transmittable to the community through farm products and disease-laden flies which follow the wagons to the city. This matter should be carefully considered before such a system is put in practice. A few cities of 100,000 and over use this system in conjunction with a municipal collection, and with some success, especially in the outskirts of the city, where the possibility of its undesirability is diminished.

For the larger cities the decision lies between the contract and the municipal systems. Examples of satisfactory and unsatisfactory service have existed under both forms, the human equation being a big factor, but the present tendency of American cities is toward the municipal collection, and a majority of the representative municipalities are using this system. It is maintained, and the evidence seems to support the contention, that municipal collection is by far the more sanitary, while contract collection is characterized by more efficiency along other lines. Granted that such obtains, and with the acknowledgment that health, sanitation and convenience are the primary requisites of any system, the argument for municipal collection is stronger. The extra sanitation of municipal

⁶⁶*Performance Counts*⁹⁹



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Economy for large or small communities

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collection is worth the extra cost. The permanency of municipal collection and the value of this to public service is another strong influence which is liable to induce our American communities to adopt this method.

As stated above, the scavenging system is but tentative, and under it a city is taking great chances of being left without an adequate collection, resulting from an epidemic among the hogs of the scavenger. Contract collection is also temporary, for at the end of the contract period it is often necessary to devise new methods of collection, the contractor being often unwilling to continue as such. Moreover, when a contractor discovers that he has made a losing contract, the service rendered for the remaining period of the contract term will not be what is desirable and necessary. Municipal collection, therefore, by its permanency insures good public service for all time. The advantages and disadvantages of each system are best displayed by comparison, as follows:

ADVANTAGES

Municipal

1. Sanitation, not profit, is the primary consideration. General supervision of the sanitary conditions of the equipment, methods, etc., is more readily effected.
2. The system is more flexible, permitting alteration for difficulties as they arise.
3. More opportunity exists for coöperation with other city officials, such as inspectors, prosecuting attorneys, etc.
4. Politics in the award of contracts is eliminated.
5. Direct responsibility to public produces quicker results.
6. Less expensive generally.
 - (a) Equipment investment is permanent—not charged for during term of contract.
 - (b) No fund necessary to meet emergencies.
 - (c) No profit included.
7. Municipal collection is permanent.

Contract

1. Application of business principles more easily effected.
2. Elimination of politics from operation removes chance of unsatisfactory changes in working force.

Municipal

1. Business principles are too often sacrificed to political machinery which demands unnecessary changes in force, methods, etc.
2. The human equation may place the gar-

bage problem in the hands of incompetent and untrained officials.

Contract

1. Profit, not sanitation, is the predominant influence. Least sanitation permissible at least cost is the criterion.
2. System is less plastic to sudden changes making contract unprofitable.
3. Retardation occurs through lack of co-operation of contractor with city officials.
4. Corruption in award of contract, such as collusive bidding, may occur. It is difficult for a city to estimate approximately when no records have been kept.
5. Failure to give full service sometimes results from lack of concern for public welfare. Breach of contract suits may not remedy unsanitary service.
6. Equipment is charged for excessively because of uncertainty of contract renewal.
7. Indirect responsibility to the public is a hindrance to efficient expeditious action.
8. Generally more costly.
 - (a) Profit estimated.
 - (b) Overcharge for equipment.
 - (c) Emergency fund necessary.
9. Contract collection is only temporary.

Theoretically, contract collection should be less expensive than municipal collection because of the possibility of stricter application of business principles. Municipal employes are more favorably treated as to wages, working hours, etc. But the necessity of a contractor's insurance against unforeseen difficulties that may arise, the inclusion in his bid of a personal profit greater than the municipal superintendent's salary, and the charge for equipment for a term of years, not permanently, makes a contract collection more expensive. It is difficult to measure statistics on contract collection because in the majority of places where it is in vogue the contractor is permitted to retain and utilize the garbage collected.

The committee's investigation showed that for 25 cities under municipal collection the average per capita cost of collection was \$.30, for 14 cities over 125,000 the per capita cost being \$.26, and for 11 cities under 125,000 the per capita cost being \$.36. The average for five cities under contract system was \$.36¼ per capita. It is hypothetical to draw too great an analogy between these figures. Varying cost may represent variable degrees of sanitation and depend largely on the number of collections made per week, the length of haul, the topography of the city and other influential factors. But it seems logical that, by the



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law of averages, these figures represent a fair degree of accuracy for the measurement of comparative costs. Per capita costs were used rather than per ton costs, because of the belief that the number of persons affected determines the number of collection trips more accurately than the amount collected, which may vary greatly in different districts.

The essentials of an efficient system of municipal collection may be stated as follows:

1. A careful but sufficient appropriation
2. A capable organization free from political influence
3. The application of business principles to all phases of the work.
4. Sanitation as the first consideration
5. Education of the public to thorough cooperation

Under the contract system, provision should be made for a bond of sufficient size to insure full and faithful performance, and a penalty for breach, sufficiently large to make such action highly unprofitable. Complete regulations also should be included in the contract.

Separate or Combined Collections

As garbage constitutes one of the three principal types of municipal waste, the other two being ashes and rubbish, the question of separate or combined collections depends greatly upon the city's methods of handling the ash and rubbish problem. Disposal, as mentioned above, is a strong factor in the determination of collection methods, and vice versa. The great majority of cities have a separate collection of garbage. Cities with incinerating plants have a combined collection of garbage, rubbish and ashes, though more often the ashes are collected separately from the other two and used for fill. The different combinations prevailing throughout the country can be enumerated as follows:

1. *Separate collection of garbage, rubbish and ashes.*—The garbage is generally reduced or fed to hogs, sometimes incinerated. The rubbish is incinerated or sorted, and the residue dumped. The ashes are used for filling purposes.
2. *Combined collection of garbage, ashes and rubbish* is characteristic of cities using complete incineration or dumping.
3. *Separate collection of garbage, and combined collection of ashes and rubbish.*—This method is generally applicable to cities where garbage is utilized by reduction or feeding,

and the rubbish and ashes are dumped. It can also be used where complete incineration is in force. Ashes and rubbish are usually dumped when this combination obtains.

4. *Separate collection of ashes, and combined collection of garbage and rubbish* usually exists in communities where garbage and rubbish are incinerated and ashes used for fill. The expense of incinerating ashes usually warrants a separate collection and disposal by fill.

The particular problems of individual cities again regulate the combination to be used. Aside from the method of disposal, which is the strongest determinant, such factors as size of city, amount of waste produced, length of haul, dumping facilities and the like must all be considered. Combined collection is cheaper because but one type of wagon is used and the same territory requires but one trip. When the reduction process or feeding method is used, separate collection is possible, although it means a more frequent collection of ashes and rubbish than is expedient. The elimination of the special garbage receptacle under combined collection is, however, a feature which negatives any economy or other advantage of this method. The customary garbage can is a big safeguard to health and convenience, and its use is necessary at any additional cost to forestall the unsanitary condition arising from the exposure to the atmosphere of garbage dumped in back yards or bins with rubbish or ashes. Separate collection of garbage is therefore the first requisite of any system which has sanitation as its criterion, and should be used regardless of the method of disposal.

Frequency of Collection

Such factors as climate, seasonal changes, number, character and congestion of population determine the frequency with which it is necessary to collect the garbage in any city. In the southern cities the frequency is generally uniform, but in the northern climate the summer and winter present variable conditions. There is a much greater supply of garbage in summer, the amount reaching a maximum in September, when about one-eighth of the yearly total is produced, and a minimum in February, when there is about one-sixteenth of the annual total. Moreover, the lower temperature of the winter season removes some of the danger of offensive odor and contagion, while

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in summer the higher temperature, coupled with the increased amount of accumulative garbage, requires a more frequent collection. Collection during the winter months is retarded by weather conditions and the possibility of frozen garbage, so that the working force necessary is not diminished, the changes balancing each other in an opportune manner.

In most cities it is generally advisable to collect from the central hotels and restaurants daily. The majority of American cities have collections at least twice a week, many more collect three times a week, while some collect six times. A good plan for northern cities is to have three collections from May 1 to November 1, and two from November 1 to May 1. The outlying districts in many cities do not require as frequent collections as the congested districts, and two visits weekly the year round is satisfactory. The frequency-of-collection problem has a strong bearing on sanitation and must be solved to insure complete freedom from offense of this nature.

Time of Collection

A few American cities, including Milwaukee, have their garbage collected at night, but the general rule is to make a day collection. There are advantages in the nightly collection, such as the elimination of traffic difficulties and of any offense that might necessarily accompany the vehicles on the street, but these are offset by the difficulty of working in the dark and the danger of prowling in back yards. The period of night collection is generally between 12 P. M. and 6 A. M., which is a shorter time and would require more equipment and employes. All thing considered, the day collection is more satisfactory, efficient and sanitary.

Receptacles

Uniformity in the type and size of receptacles is an agreeable facility which some cities require. It is a good rule to have definite regulation as to the size, at least, and most cities find the 20-gallon can most adaptable. A 20-gallon can should easily contain a three-day output of garbage from two families, since the wartime regulations of the Food Administration are still producing some effect. A metal receptacle, water-tight, and with

close-fitting cover, should be provided for by ordinance.

Location of Receptacles

There is a difference of regulation among cities as to the location of receptacles, some requiring the householder to place the cans on the curb at a certain hour, others insisting that they be placed in an alley at the side of the house, and still others having collection from the back yard. There is great cause for opposition to the first plan: it requires extra work for the householder when it is difficult enough to educate all to the proper treatment of garbage; it will not be done efficiently and as often as is necessary; and it may diminish sanitation. The rear yard collection, though more costly, is well worth the added expense, which will be gladly paid by all who experience the curb collection.

Zone and District Organization

The peculiarities of the garbage problem necessitate a careful zone and district plan of the city, the zoning to define the localities where it is necessary to make more than the usual number of collections per week, at such places as hotels and restaurants, and the districting to show those areas from which collections are made on certain days of the week.

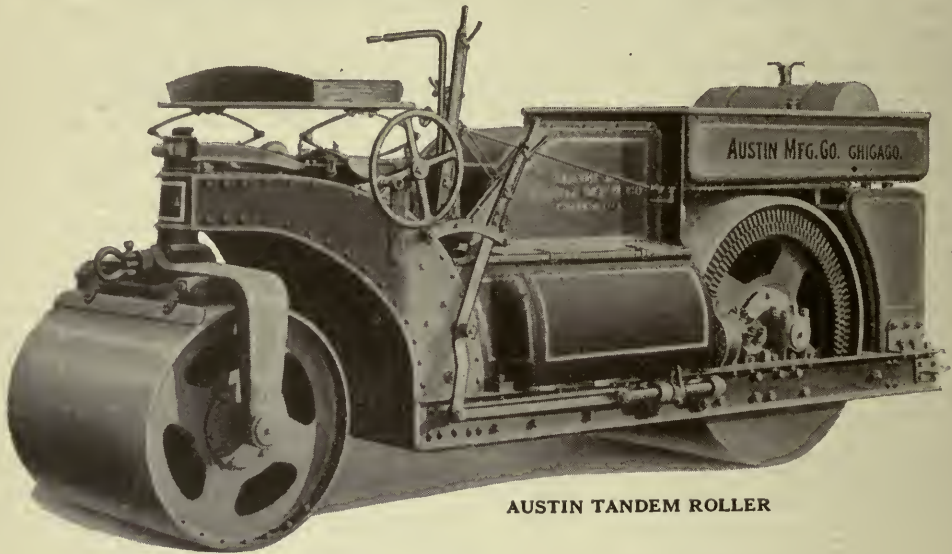
The factors which determine the number of districts may be enumerated in this order:

- | | | |
|---------------------------|---|----------------------------|
| 1. Area of city | } | 5. Frequency of collection |
| 2. Number miles of street | | 6. Equipment used |
| 3. Topography | | 7. Use of substations |
| 4. Population | | 8. Disposal location |

Effort should be made to provide for climbing of grades with light loads, descending with heavy loads, and for as short hauls of full loads as is possible. Economy will result from a route scheme whereby vehicles when they have been loaded will be near to the place of disposal. Some cities use a system of substations from which the garbage is trucked on faster vehicles, generally with tractors, to the place of disposal, a plan which is best adapted to level localities.

Population studies should be made by the superintendent of collection, showing past and prospective growth, sectional growth, character and congestion of the population, and seasonal changes, as well as time studies of collection

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Working Force and System

The system of collection is dependent upon many of the above enumerated phases of the general collection problem. Some cities have wagons for which the same man acts as driver and collector, but this method is decidedly awkward and expensive, except for long trips between stops; other places have a gang system, especially in curb collection, where a number of men precede and follow the wagon. This is satisfactory where arrangements are such as to prevent unproductive time on the part of the working force while the load is being carried to the place of disposal. The majority of communities have two men engaged with each team, sometimes one as driver and one as collector, more often both acting in the double capacity. For efficient work, the type to be used must also be determined by the zone plan of the city and by the character of the various areas.

Numerous loading stations, at which the garbage is dumped before final transportation to the place of disposal, are used in many cities where local conditions warrant this, but such an arrangement is not adaptable to a city where every section slopes toward the center.

It is advisable to have daily reports kept

of the amount of garbage collected in the various sections into which the city is divided, so as to check up the efficiency of the force, which could be changed from one territory to another in order to make comparison. The collection ability of each set of workers should be frequently inspected by the garbage superintendent or inspector and a record kept of satisfactory or unsatisfactory conditions of sanitation. The working force should be constantly instructed as to the necessity of sanitation throughout their whole routine. The matter of personal sanitation of the workers is especially important.

The supervision of waste collection and disposal should be vested in a superintendent, who should keep in constant touch with all phases of the situation and who should be versed in such principles of business as would enable him to use scientific methods in the management of all matters within the compass of his authority. An organization should be perfected which would handle the situation smoothly and not be encumbered by excessive system or working force. The garbage problem is a business in itself and requires all the attention and study of the regular business world.

EDITORIAL NOTE.—Part II, the concluding portion of this article, will appear in the June issue of THE AMERICAN CITY.

On the Calendar of Conventions

- MAY 18-22.—PASADENA, CALIF.
National Electric Light Association. Annual convention. Acting Secretary, S. A. Sewall, 29 West Thirty-ninth Street, New York City.
- MAY 19-21.—ATLANTA, GA.
Tri-State Water and Light Association of the Carolinas and Georgia. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.
- MAY 21-22.—COLUMBUS, OHIO.
Ohio Commercial Secretaries' Association. Annual meeting. Secretary, Irving B. Lincoln, Chamber of Commerce, Hamilton, Ohio.
- MAY 31-JUNE 5.—COLORADO SPRINGS, COLO.
American Library Association. Annual convention. Secretary, George B. Utley, Library of Congress, Washington, D. C.
- JUNE 1-3.—WINNIPEG, MAN.
Canadian Good Roads Association. Annual convention. Secretary, George A. McNamee, New Birks Building, Montreal, Que.
- JUNE 2-3.—HASTINGS, NEBR.
Nebraska State Association of Commercial Clubs. Annual meeting. Secretary, Harrison Elliott, Columbus, Nebr.
- JUNE 7-10.—DETROIT, MICH.
International Association of Chiefs of Police. Annual convention. Secretary, James L. Beavers, Chief of Police, Atlanta, Ga.
- JUNE 16-17.—BEMIDJI, MINN.
League of Minnesota Municipalities. Annual convention. Executive Secretary, E. L. Bennett, University of Minnesota, Minneapolis, Minn.
- JUNE 16-23.—DES MOINES, IA.
General Federation of Women's Clubs. Biennial convention. Corresponding Secretary, Mrs. Mary I. Wood, Portsmouth, N. H.
- JUNE 21-23.—VANCOUVER, B. C.
Canadian Public Health Association. Annual meeting. General Secretary, R. D. Defries, M. D., Toronto, Ont.
- JUNE 21-25.—ATLANTIC CITY, N. J.
International Association of Rotary Clubs. Annual convention. Secretary, Chesley R. Perry, 910 South Michigan Avenue, Chicago, Ill.
- JUNE 21-25.—MONTREAL, QUE.
American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West Seventy-first Street, New York City.
- JUNE 22-25.—PHILADELPHIA, PA.
American Society for Testing Materials. Annual meeting. Assistant Secretary, C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.
- JULY 4-10.—SALT LAKE CITY, UTAH.
National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1400 Massachusetts Avenue, N. W., Washington, D. C.
- JULY 6-8.—JAMESTOWN, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual conference. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.
- JULY 26-30.—TORONTO, ONT.
International Association of Fire Engineers. Annual convention. Acting Secretary, Stephen E. Hoey, Room 1130, Municipal Building, New York City.
- OCTOBER 12-15.—ST. LOUIS, MO.
American Society of Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, 404 Lincoln Avenue, Valparaiso, Ind.



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Information for City Attorneys and Other Municipal Officers, Summarizing
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Conducted by A. L. H. Street, Attorney at Law

See also "Assessments for Street Lighting," by Mr. Street, on page 503 of this issue.

Removal of Appointive Officers

A municipal body or official, having power to appoint an officer or subordinate, has power to remove him in the absence of any law restricting that power. Where an appointee can be removed only for cause he is entitled to a hearing and an opportunity to refute the charges against him, unless the law prescribes a different procedure for making such removals. Where the law authorizes an officer to remove an appointee if in his judgment a cause for such removal exists, and prescribes the procedure which he shall follow in making the removal, the only questions open to examination by the courts are whether the prescribed procedure has been followed and whether the reasons assigned for the removal are sufficient to justify it. (Minnesota Supreme Court, *State ex rel. Early vs. Wunderlich*, 175 Northwestern Reporter, 677.)

Responsibilities of Water Companies

A water company's franchise to maintain pipes, etc., in streets implies an obligation to see that these instrumentalities are constructed and maintained with reasonable

care for the safety of those using the streets for public travel. So, it is held that where plaintiff city was required to pay damages for injury to a pedestrian who fell over a stop-box negligently maintained in a public sidewalk by defendant water company in such manner as to be dangerous to pedestrians, it was entitled to compel defendant to reimburse it against such liability; the accident being primarily due to breach of the water company's duty to maintain the appliance in safe condition, and the city's negligence consisting merely in failure to require the company to remedy the defective condition. (Iowa Supreme Court, *City of Des Moines vs. Des Moines Water Co.*, 175 Northwestern Reporter, 821.)

North Carolina Street Railway Fares

Under the North Carolina laws, giving the Corporation Commission of the state supervision over street railways, with power to fix fares, the Commission can grant an increase in fares above a maximum prescribed in a franchise contract between a street railway company and the city within the limits of which it operates. (North Carolina Supreme Court, *Southern Public Utilities Co. vs. City of Charlotte*, 101 Southeastern Reporter, 619.)

Folding Band-Wagon Originally Developed in Minneapolis

F. L. Mulford, Horticulturist of the U. S. Bureau of Plant Industry, has written us as follows: "On page 338 of your magazine for October, 1919, you give credit to Fort Wayne, Ind., for the design, as well as the construction, of a folding band-wagon. I wish to call your attention to a band-wagon of this design which was

shown to the convention of the American Association of Park Superintendents at its meeting in Minneapolis, in 1908. Since that date credit for the design of this type of band-wagon has been generally given to Theodore Wirth, Superintendent of Parks of that city."—We are glad to bring this matter to the notice of our readers.



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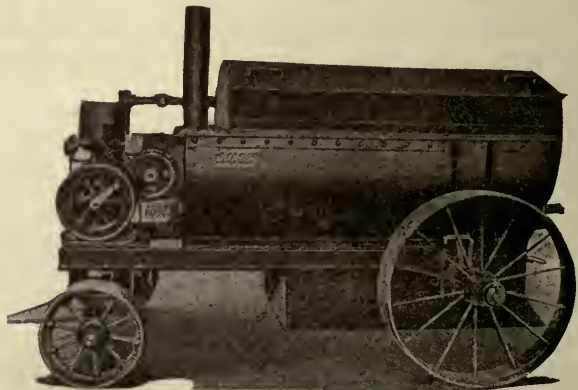


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Municipal and Civic Publications

Useful Data on Reinforced Concrete Buildings for the Designer and Estimator.

ENGINEERING STAFF OF THE CORRUGATED BAR COMPANY, INC., BUFFALO, N. Y. 1919. 216 pp. Diagrams, tables and formulæ.

This small, flexible-covered volume contains a digest of the best practices in reinforced concrete building design, with full explanations of formulæ and examples of proper usage. The diagrams are unusually clear and easily read. The data on flat construction and square-tied and spiral columns are very comprehensive. This little book will be of great value to engineers and contractors desiring a small volume of pertinent data on this subject.

The Joke About Housing.

CHARLES HARRIS WHITAKER, Marshall Jones Company, Boston. 1920. ix + 233 pp.

"The more houses we built, the more costly and smaller they grew, then flats and apartments came, and all the time rents grew higher and higher. Is it a joke?" This book is an attempt to discover some of the social and economic phases lying behind our present housing difficulties. It traces back the various aspects of the problem and comes to the conclusion that it is essentially a land problem. Remedies are then proposed for solving the problem of land control and a program is given to carry out the ideas thus presented. In appendix form are contained in full the two prize-winning theses on "The Best Solution of the Housing Problem" in the contest held under the joint auspices of the *Journal of the American Institute of Architects* and the *Ladies' Home Journal*.

The Community Center.

L. J. HANIFAN, State Supervisor of Rural Schools, West Virginia. Silver, Burdett & Company, Boston. A volume in the Teacher Training Series, edited by W. W. Charters, Professor of Education, Carnegie Institute of Technology. 1920. ix + 214 pp.

Believing that improvements in rural life conditions must be effected by the rural people themselves, and that for some time to come this work must be carried on largely under the organization and leadership of the teachers, using the school plants as community centers, the author of this book presents practical working programs and the underlying philosophy and methods in the use of such programs.

The Housing Book.

WILLIAM PHILLIPS COMSTOCK, Editor of *Architecture and Building*, compiler. The William T. Comstock Company. New York. 1919. 132 pp. Illustrated.

This contribution to recent housing literature gives examples of eleven housing projects which have been carried out under government organizations or by large corporations. While the usual present-day housing project is financed upon an entirely different basis, the descriptions and illustrations of building plans and layout contain many useful suggestions.

Citizenship in School and Out.

ARTHUR WILLIAM DUNN, Specialist in Civic Education, U. S. Bureau of Education, and HANNAH MARGARET HARRIS, Instructor in History, Civics and English, State Normal School, Hyannis, Mass. D. C. Heath & Co., Boston. 1919. xxiii + 144 pp. Illustrated.

This book, which covers the first six years of school work, is based on the idea that the teaching of civics is a very essential part of the school course, and not merely an incidental subject. It endeavors to meet squarely the need for present-day emphasis of democratic methods and conceives a broad idea of citizenship as applying to the home, recreation and work, as well as a more conventional subject matter.

Who's Who Among Commercial Organization Secretaries.

AMERICAN CITY BUREAU, New York. 1920. 182 pp.

The American City Bureau has issued this book in response to many calls for a source of information which would enable the commercial organization secretary to keep more closely in touch with those who are fellow-members in his profession. It will serve the double purpose of furthering a more widespread acquaintance among chamber of commerce secretaries and of constituting a useful record and ready reference. Because of the frequent changes which occur in secretarial personnel, provision has been made in the form of wide margins and occasional blank spaces scattered thruout the book for those who desire to make their own notations from time to time. More than seven hundred secretaries are listed and in a large majority of cases a brief record of each man's career has been given. It is planned to issue "Who's Who" yearly.

Manual of Tree Diseases.

W. HOWARD RANKIN, Assistant Professor of Plant Pathology, New York State College of Agriculture, Cornell University. The Macmillan Company, New York. 1918. xx + 398 pp. Illustrated.

This volume contains complete discussions of the diseases of the more common trees of the United States. These treatises are grouped into chapters under the common names of the trees affected, and the chapters are arranged alphabetically. One general chapter covers the diseases common to all kinds of trees, the species of trees affected, and their geographic distribution. The destructiveness and symptoms of the different diseases are presented in full. This book will be found to be unusually valuable to authorities in charge of the shade trees on streets and in parks, as by careful reading one may learn to determine the causal agent from the appearance of the tree when blighted. Special attention is paid to the subject of tree surgery, which has proved so beneficial in extending the lives of trees which have been damaged accidentally.

The Citizen and the Republic.

JAMES ALBERT WOODBURN, Professor of American History, Indiana University, and THOMAS FRANCIS MORAN, Professor of History and Economics, Purdue University. Longmans, Green & Co., New York. 1919. viii + 398 pp. Illustrated.

A text-book of civil government for use in secondary schools. It conceives civics as covering all of the community activities and at the same time gives a country-wide background to the subject.

The Cheap Cottage and Small House: A Manual of Economical Building.

GORDON ALLEN, Architect, State Royal Engineers; Fellow of the Royal Institute of British Architects. Charles Scribner's Sons, New York. 1919. xii + 142 pp.

An excellent presentation, written entirely from the English viewpoint, of modern small-house building. It will prove a fertile source of ideas for the professional house builder.

Port of New York Annual.

ALEXANDER R. SMITH, Editor *Marine News*, Compiler and Editor. Smith's Port Publishing Company, Inc., New York. 1901. 301 pp. Illustrated.

Contains a wealth of information on all the various activities relating to the Port of New York. Of especial interest are such features as the pending association of

Estimates of Cost of Proposed Work
Reports on New Improvements
Preparation of Plans
Supervision of Construction

Dams and Reservoirs
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bi-state port control, an outline of the steps necessary to New York's retention of world port primacy, and a trade index to the various marine businesses in the metropolitan district.

Stabilizing the Dollar: A Plan to Stabilize the General Price Level Without Fixing Individual Prices.

IRVING FISHER, Professor of Political Economy in Yale University. The Macmillan Company, New York. 1920. xlix + 305 pp.

Electric Franchises in New York City.

LEONORA ARENT, Ph. D., Professor of Economics in Saint Mary-of-the-Woods College. Columbia University; Longmans, Green & Co., Agents, New York. 1919. 184 pp.

Labor and the Common Welfare.

SAMUEL GOMPERS, President of the American Federation of Labor; Vice-President of the National Civic Federation. E. P. Dutton & Co., New York. 1919. ix + 306 pp.

Essentials of Civics (Wisconsin Edition).

DELOS O. KINGSMAN, Ph. D., Professor of Economics, Lawrence College. The College Press, Appleton, Wis. 1919. 319 pp. Illustrated.

Walled Towns.

RALPH ADAMS CRAM, Litt.D., LL.D. Marshall Jones Company, Boston. 1920. 105 pp.

"A way out of the present confusion that has overtaken modern civilization."

Modern Industrial Movements.

Selected articles compiled and edited by DANIEL BLOOMFIELD. With an Introduction by Meyer Bloomfield. The H. W. Wilson Company, New York. 1919. xxii + 376 pp.

Consolidation of Local Governments in Chicago.

Draft of a proposed article of the constitution of the state of Illinois, providing for the consolidation of local governments having jurisdiction wholly or partly within the city of Chicago, together with explanatory statement. Prepared by the Chicago Bureau of Public Efficiency, 315 Plymouth Court, January, 1920. 23 pp. Map of Cook County, Ill. Chart showing governmental situation in Chicago. (Apply to Harris S. Keeler, Director, Chicago Bureau of Public Efficiency.)

Child Welfare, Forsyth County, N. C.

A report of the Forsyth County Board of Charities and Public Welfare after a careful and thoro investigation of social conditions within the county, especially those pertaining to children. 40 pp. Illustrated. (Write to A. S. Macfarlane, Superintendent of Public Welfare, Winston-Salem, N. C.)

Community Buildings as War Memorials.

Two new bulletins (Nos. 9 and 10) in the series issued by the Bureau of Memorial Buildings of the War Camp Community Service, 124 East 28th Street, New York, N. Y. Entitled, respectively "The Architecture of Memorial Community Houses" (36 pp.) and "Architecture of Large Memorial Buildings" (29 pp.). Many views and diagrams. (Apply to the Bureau.)

Questions on Community Problems.

Prepared by research workers of the Student and Indus-

trial Committees, War Work Council, National Board of Young Women's Christian Associations. 1919. 10 pp. (Published by The Womans Press, 600 Lexington Avenue, New York, N. Y.)

Public Playgrounds.

A pamphlet on how to create interest in rural and city playgrounds, with a description of the most desirable play equipment and its use and care, and information about some of the most enjoyable playground games and the cost of securing suitable apparatus. There are also some words of advice for the teacher. 24 pp. Copies furnished without charge by The Everwear Manufacturing Company, Springfield, Ohio.

Safety Instruction in Schools.

"Plan of Safety Instruction in Public and Parochial Schools," by Dr. E. George Payne, Principal Harris Teachers' College, St. Louis, Mo. An address delivered at the 1919 Congress of the National Safety Council, outlining the new method of teaching safety in public schools which has been adopted by the schools of St. Louis. (Published by the National Safety Council. Address Sidney J. Williams, Secretary, 208 LaSalle Street, Chicago, Ill.)

Road Laws of the American States.

A digest collected by Lewis H. Machen, Director of the Legislative Reference Bureau of Virginia. 1919. 154 pp. (Apply to Davis Bottom, Superintendent Public Printing, Richmond, Va.)

The Framingham Community Health and Tuberculosis Demonstration.

Report of the Committee on Appraisal. "What Has the Demonstration Done? Should It Be Continued?" October, 1919. 19 pp. (Apply to Professor C. E. A. Winslow, Yale University, New Haven, Conn.)

New Rent Laws for New York State.

A 14-page pamphlet published by S. W. Straus & Co., 150 Broadway, New York City, containing the full text of the twelve new statutes passed by the State Legislature March 31, 1920—the most important legislation affecting real estate interests in New York City for many years. (Apply to the company, as above.)

National Safety News.

The National Safety Council publishes a 4-page Weekly News Letter giving editorial comment, items of progress and general information on the various sections of the broad field covered by the work of the Council. Illustrated. (Address the National Safety Council, 168 North Michigan Avenue, Chicago, Ill., for subscription and advertising rates.)

Housing Conditions in New York State.

Report of the Housing Committee of the Reconstruction Commission of the State of New York. 65 pp. Also an 18-page pamphlet containing the "Program of Architectural Competition for the Remodeling of a New York City Tenement Block" under the auspices of the Joint Legislative Committee on Housing and the Reconstruction Commission of the State of New York. Both pamphlets dated March 26, 1920. (Apply to Clarence S. Stein, Secretary, Housing Committee, Reconstruction Commission of the State of New York, New York, N. Y.)

Child Welfare in Kentucky.

An Inquiry by The National Child Labor Committee for the Kentucky Child Labor Association and the State Board of Health, under the direction of Edward N. Clopper, Ph. D. The various sections of the report are as follows: "Health," by H. H. Mitchell, M. D.; "Schools," by Mrs. Elizabeth Bliss Newhall; "Recreation," by Raymond G. Fuller; "Rural Life," by Charles E. Gibbons; "Child Labor," by Mrs. Loraine B. Bush; "Juvenile Courts," by Mabel Brown Ellis; "Law and Administration," by W. H. Swift. 1919. 322 pp. (Order from the National Child Labor Committee, 105 East 22d Street, New York, N. Y.)

A Group of Municipal Reports

Buffalo, N. Y.—First Annual Report of the City Planning Committee of "The Council," October 30, 1918–December 31, 1919. (Apply to Karl L. McCormick, Secretary, City Planning Committee.)

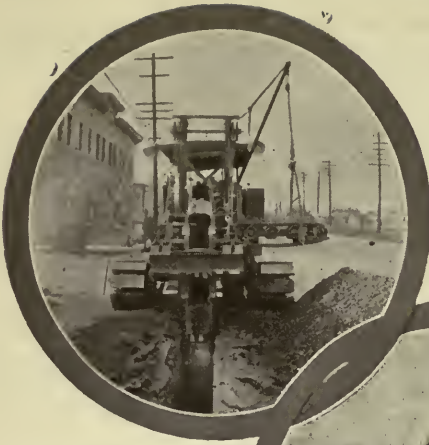
Fredericksburg, Va.—Annual Report on the Fiscal Affairs of the City for the year ending December 31, 1919. (Apply to Levin J. Houston, Jr., City Manager.)

New York, N. Y.—Twentieth Annual Report of the

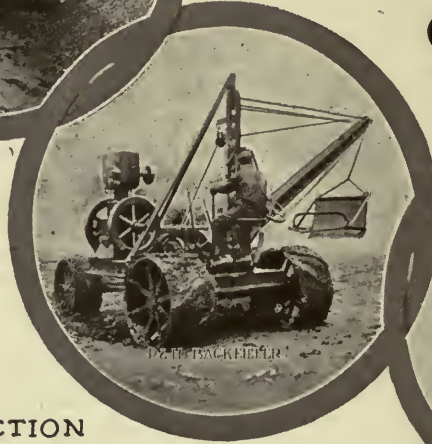
Superintendent of Schools, 1918, covering community centers, recreation centers, unity centers, extended use of the school plant, forums, vacation schools, community canning centers, playgrounds, play schools for the all-day care of children, swimming pools and shower baths, and summer classes for handicapped children.

Ogden City, Utah.—Annual Report of the Auditor for the year 1919, including the report for January, 1920.

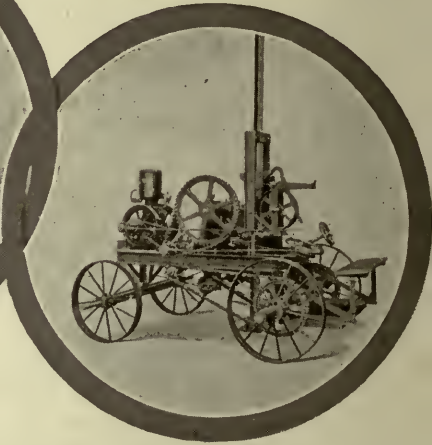
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Methods, Materials and Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

An Ever Active Traffic Guard

Day by day, in perusing the newspapers, one sees accounts of traffic policemen who are run down by careless autoists or truck drivers, also items about heavy metallic or cement traffic posts, which have been broken by vehicles striking them and which have smashed radiators and headlights on the machines which have struck them. In order to obviate these difficulties, and provide a traffic post which is effective and safe under all conditions, J. H. Lehman, Elkhart, Ind., is manufacturing a traffic direction indicator which may be electrically or gas lighted, and which, if accidentally struck by passing vehicles, will bend over and rebound to normal position after the car has passed over it. Mr. Lehman has shown in an interesting manner the economy of the use of a post of this type, by comparing the cost of the post with the average wages paid to a

policeman. Average police wages are \$100 per month or more. This equals 40 cents per hour. To guard a dangerous corner one week of 168 hours, at 40 cents per hour, costs \$67.20, or considerably more than the cost of the post complete. Policemen sometimes grow weary, and consequently neglect their duty. The traffic post, being automatic, never grows weary, and it is claimed to be just as good at the end of the year as at the beginning.

The post is painted a flashy color to correspond with standard traffic posts in use in any city, or to indicate the various highway colors, such as are used by different highway associations. The electric or gas light at the top is covered with an ordinary lantern top, which, if broken, can be replaced by purchasing a standard lantern globe from any local dealer. The electric light can be turned on by pushing a button at the central station, thus eliminating the need of a man going around to visit the posts, and doing away with the possibility of running into it at night. The posts are built complete, so to instal this traffic guard, it is only necessary to dig a small hole and place in it a conduit bend, fill in with slush cement, set in the post and connect the wire.

The question has been raised many times as to whether a permanent traffic post is legal, and bitter discussions on this subject have come up. It is claimed that the Lehman indicator does not violate any of the provisions regarding the right of vehicles to have the full use of the highway. The post is simply an indicator and will do no damage if it becomes necessary to run into it in cases of emergency.

H. W. Clark Company Cited for War Work

The H. W. Clark Company, Mattoon, Ill., manufacturers of meter boxes and other waterworks appliances, recently received a certificate signed by the Secretary of War, acknowledging the valuable services rendered by them during the war. The certificate reads as follows:

"The War Department of the United States of America recognizes in this award for distinguished service the loyalty, energy and efficiency in the performance of the war work by which H. W. Clark Co. aided materially in obtaining victory for the arms of the United States of America in the war with the Imperial German Government and the Imperial and Royal Austro-Hungarian Government."



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The Manufacture and Use of Liquid Chlorine

Chlorine gas is one of the products in the manufacture of caustic soda. When a current of electricity is passed thru an electrolytic cell containing salt solution, the salt is decomposed into its component parts, sodium and chlorine. The sodium forms caustic soda when reacting with water and is collected at one of the poles. The chlorine is freed at the other pole, from which it is drawn to the liquefaction plant. Here it passes thru stages of purification by compression and refrigeration. The accompanying illustration shows the refrigerating equipment of the Electro Bleaching Gas Company, whose sales offices are located at 18 East 41st Street, New York City.

The liquid chlorine manufactured by this company is claimed as a result of analysis to be from 99.8 to 99.9 per cent chemically pure. In order to maintain the purity of liquid chlorine and the cleanliness of the cylinders in which it is shipped, great care is taken to see that cylinders shipped to waterworks and sewage disposal plants are always maintained for that service, inasmuch as any impurities which would float on the surface of the liquid would tend to clog the chlorine control apparatus and possibly at a critical time expose whole communities to ravishes of typhoid due to a crippled chlorinator. To guard against such fouling of cylinders, the Electro Bleaching Gas Company has set aside several thousand cylinders for service where the gas is passed thru delicate measuring apparatus, these cylinders being painted red. Such cylinders are periodically inspected by removing the valve and inserting an incandescent lamp. Chlorine for all other uses is shipped in black containers. It is claimed that the process of manufacture removes every trace of foreign matter from the chlorine, and that the cylinders always contain full weight of chlorine.

Liquid chlorine is shipped in steel cylinders of two sizes, the smaller containing approximately 100 pounds of chlorine, gross weight being about 200 pounds; the larger containing approximately 150 pounds of chlorine, the gross weight being about 285 pounds. All cylinders are carefully tested to withstand an internal pressure of 1,000 pounds per square inch. The pressure of liquid chlorine at ordinary room temperature is about 100 pounds per square inch. The Interstate Commerce



REFRIGERATING AND COMPRESSING EQUIPMENT IN A LIQUID CHLORINE FACTORY

Commission regulations provide for the thorough periodic inspection of all containers of liquid chlorine. The cylinders are provided with specially constructed valves which permit of easy regulation for the escape of the chlorine from the cylinders when in use. The chlorine when released from the cylinder immediately gasifies and is available in that form.

The cost of sterilization of water by liquid chlorine is extremely low. As an example of many cases of questionable economy on the part of those responsible for the purity of water, the following instance may be cited. Not long ago a small town in western New York was afflicted with six cases of typhoid fever. Fortunately none were fatal. The water superintendent stated that while he thought the water was entirely safe to drink, he had advised chlorination, as the source of this supply was a very questionable watershed. This plan was turned down because the town was poor, the supposition being that the treatment of the water-supply would prove too expensive, altho no real investigation was made as to the cost. They were surprised to learn that, after the initial cost of the chlorinator, the daily outlay of the community for chlorine would have been less than 15 cents.

Cummin Locates in New York

Hart Cummin, recently connected with the Platt Iron Works, Dayton, Ohio, has resigned to become associated with his brother, Gaylord C. Cummin, in municipal consulting engineering work, with headquarters at 51 Chambers Street, New York City. Gaylord C. Cummin was formerly City Manager of Dayton and later of Jackson and Grand Rapids, Mich.

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Dorr Company Organizes Sanitary Engineering Department

The Dorr Company, Engineers, of 101 Park avenue, New York City, has recently arranged for the separation of its domestic sewage and trade waste from its industrial activities by organizing a Sanitary Engineering Department. All matters, including engineering service, pertaining to treatment of domestic sewage, waste waters of tanneries, glue, gelatine, milk products and corn products factories, cotton, silk and textile dyeing and finishing mills, canneries, brass, steel and rolling mills, etc., are now being handled by the Sanitary Engineering Department.

Colonel I. L. Reeves, C. E., formerly President of Norwich University, and more recently President of the A. E. F. University of France, has resigned from the Army to accept the management of the department.



Motor Truck Tackles Hauling Problem on Heavy Grade.

The front cover of the Town and County Edition of THE AMERICAN CITY for April showed a Selden truck climbing a rough road near South Bloomingville, Hocking County, Ohio. The rise is 18 feet in 93 feet over a rough, rocky hill, which proved very difficult for horses with an ordinary load and had never been attempted by a motor truck. A local fuel supply company found it necessary to take considerable material up this grade. Horses were used, but it was proposed to cut down expenses and time by hauling thru the use of a motor truck. The Selden truck was selected and successfully made the trip until all of the material was moved.

Transportation has always been a problem of the world—of industry, commerce, business, home and all. Each period has brought new transportation methods, gradually rising from the plane of human burden bearers, thru the levels of beasts of burden, to the higher plane of mechanical carriers. Waterways and railways both have carried the nation forward, but the limitations brought out during the war also gave opportunity for the supplying of a greater need, and to-day the motor truck is a proven factor in the success of our country, its business and prosperity.

Dayton-Dowd Opens Cleveland Branch

The Dayton-Dowd Company, manufacturers of centrifugal pumps, Quincy, Ill., has recently announced the opening of a branch office in Cleveland, Ohio, under the management of L. E. Maher of the Maher Engineering Company, of Chicago. This office will handle the line of Dayton-Dowd centrifugal pumps in addition to other mechanical equipment and is prepared to give prospective pump users complete information and recommendations covering their pumping problems.

An Unusual Sewer Cleaning Job

The accompanying illustration shows some of the material removed from one section of an 18-inch sewer at the Hooker Electrochemical plant at Niagara Falls, N. Y. This material was removed by one of the B. M. E. combined sewer-cleaner and root-cutter machines formerly sold by the Buffalo Municipal Equipment Company, Buffalo, N. Y., which has been succeeded by Thompson-Fleming, 170 Elliott street, Buffalo, N. Y. The material shown in the illustration represents an accumulation of several years in a sewer which the Hooker Electrochemical Company had attempted to clean several times, but without satisfaction. The material consisted of old soft materials, pieces of pipe fittings, boards and hard scale. This 18-inch sewer had been reduced to a 7-inch capacity because of the deposit shown. All other appliances which have been tried failed to make any impression on this clogging material, because it had practically become part of the tile, on account of the lime deposit. The result of removing the material was so satisfactory that the Hooker Electrochemical Company decided to use this machine in cleaning all of its sewers, and four additional sets of B. M. E. cleaners were sold in the immediate vicinity because of this excellent piece of work.



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4. 1861—Secession.
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6. 1920—World Organization.

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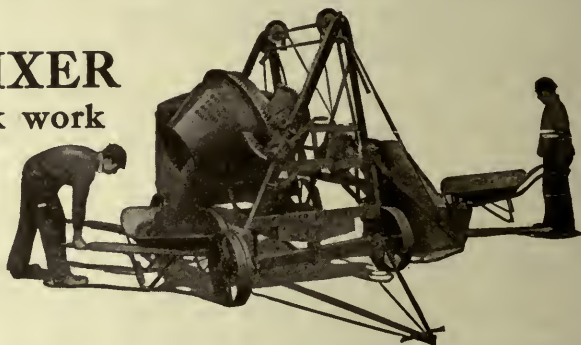
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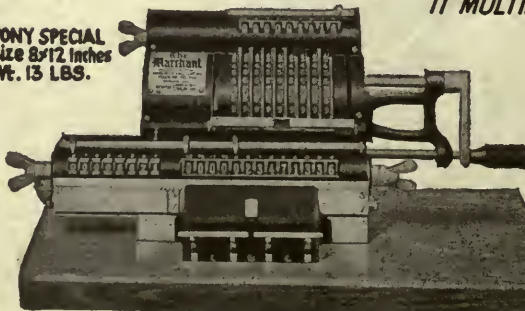
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THE SANISEP SYSTEM AS APPLIED TO DWELLINGS

Septic Tanks for Schools and Industrial Settlements

The "Sanisep" sewage disposal system manufactured by the Cement Products Company, Wilmington, N. C., is built along the lines of the well-known L. R. S. system, which was devised several years ago by officers of the U. S. Public Health Service. The Sanisep system consists of two tanks, first, a liquefying or sludge tank, and second, an effluent tank. These tanks are constructed of reinforced concrete, and are waterproofed to prevent leakage and absorption. The tanks, including the bottom, are made in one piece, thus eliminating any danger due to leaky joints. It is claimed that these tanks are not affected by any corrosive action due to acid in the sewage. They have sufficient depth to insure complete digestion of the sewage, and sufficient area is allowed for the formation of a proper bacterial scum or mat.

The sewage is received first in the liquefying tank, where a greater portion of the bacterial action takes place. By means of an inverted "U" pipe, the ends of which extend several inches below the water level in the tanks, the digested or liquid sewage is carried from the liquefying tank into the effluent tank. Here a further bacterial action takes place, and the liquid is led off into a tile drain, which is laid in cinders or other loose material, from which it passes off into the soil thru the joints of the tile. The Sanisep system has been installed in a great many schools and in many villages, particularly industrial settlements, where a complete sewage disposal system is not advisable and where one or two houses can be connected up to a small sewage disposal unit.

Highway Lecture Facilities

The engineering staff of The Barrett Company, 17 Battery Place, New York City, have given talks to students in engineering and road schools on the application of coal-tar materials to the solution of modern road problems. These lectures have also been given in good roads campaigns, where they have proved of great value because they are not too highly technical and can be appreciated by all. During the present season the staff of lecturers includes Philip P. Sharples (Harvard, 1895), Manager of the General Tarvia Department; John S. Crandell (New York University, 1904), Consulting Engineer; Walter Buehler (Purdue, 1902), Consulting Engineer, Wood Preservation; Paul K. Sheidler (Ohio State University, 1909); and C. S. Reeves (University of Pennsylvania, 1897).

The lectures, which are illustrated by lantern slides or moving pictures, cover the following topics: 1, chemistry, manufacture and control-testing of refined tars; 2, laboratory tests to which road tars are subjected; 3, the construction of pavements with refined tar; 4, city pavements of the block type; 5, wood preservation; 6, wood-block pavement; 7, maintenance; 8, maintenance of broken stone and gravel roads.

New Licensees for Wire-Cut Lug Brick

The Dunn Wire-Cut Lug Brick Company, Conneaut, Ohio, has recently announced that the Patton Clay Manufacturing Company, Patton, Pa., one of the leading paving brick plants in Pennsylvania, has become a licensee of the former company and will engage in the manufacture of wire-cut lug paving brick.

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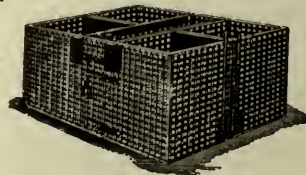
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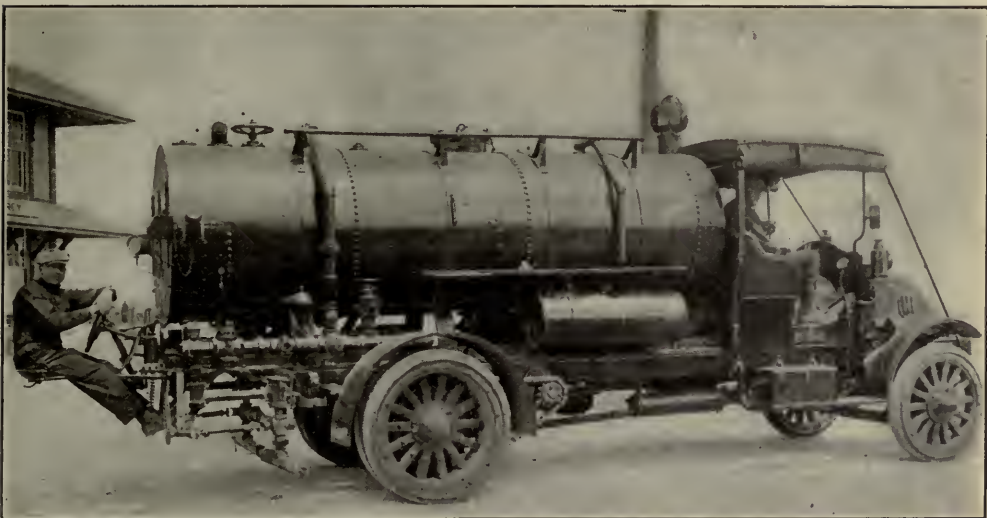


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In the treatment of roads and highways with bituminous material it is well known that the proper application of such materials is of as much importance as the quality or nature of the material itself. Good material has been injured or condemned and time and money wasted because of the use of crude methods of application and the use of inferior apparatus with consequent unsatisfactory results. The Kinney Manufacturing Company, Boston, Mass., manufactures an efficient combination auto heater and distributor for heating and applying under pressure all kinds of bituminous materials, either hot or cold, for road construction, maintenance or dust laying. The amount of heat and volume of material applied are under constant control of the operator, and positive pressure within the tank at all times is produced by the Kinney pump. One of the particular features of this distributor is that it can be demounted from the truck chassis in order that the truck itself may be available for other purposes when not required for road oiling. The tank is mounted upon a separate sub-frame so that it is only necessary to remove the bolts connecting it with the steel frame of the truck and by means of falls lift the entire oiling outfit as one unit from the truck chassis. The time required for demounting need not exceed $\frac{1}{2}$ -hour and is accomplished without detaching any parts, disconnecting any piping or in any way disturbing the adjustment of the tank equipment. By this arrangement the truck becomes a permanent all-the-year-round investment, while the distributor is available during the entire season when it is needed.

The tank of the distributor is fitted with horizontal tubes and equipped with kerosene oil burners so arranged as to convey the hot

gases through the tubes, giving high heating efficiency. The pump is of the rotating plunger type, of sufficient capacity to give a uniform pressure at the nozzles. The nozzles are adapted to produce a uniform spray in any desired volume and are so made that with proper care they will not become clogged through accumulation or hardening of material. All valves and controlling levers are so arranged that they may be manipulated by the operator from his seat at the rear of the apparatus.

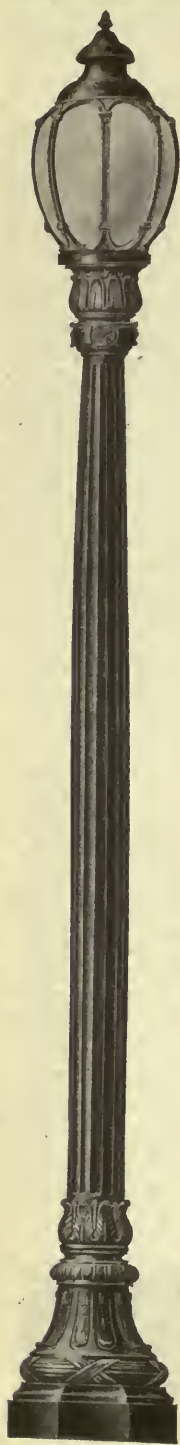
Safety Equipment for Municipal Linemen

The protection of employes against high voltage circuits in municipal electric power plants is imperative. F. A. Hardy & Co., 10 South Wabash Avenue, Chicago, manufacture lineman's blankets and rubber gloves of high grade for the use of the lineman when at work on high-tension circuits. Leather protection gloves are also manufactured by this company.

The safety blankets for linemen are composed of two thicknesses of steam-cured rubber, between which fabric is inserted, the whole being vulcanized into one solid sheet $\frac{1}{16}$ -inch thick and 36 inches square. This provides ample protection against circuits of as much as 25,000 volts.



A PROTECTING GLOVE FOR LINEMEN



Modern and Serviceable

Modern ornamental street lighting renders various services of material benefit. First, it provides efficient illumination for your city. Second, it protects the lighted area from any possible crime. Criminals of all kinds prefer to work in the dark. They abhor light.

There are several other benefits to be derived from up-to-date street lighting, and if you are interested in maintaining the prestige of your city—if you are interested in creating civic pride—if you are interested in making a better city—send for our illustrated booklet.

APPEARANCE

Our ornamental lighting system is on the job 24 hours out of every 24. At night it lights up your business streets, residential sections, parks and boulevards. During the day the handsome poles greatly aid in beautifying your city. There is nothing that can make a town more attractive than a neatly laid out system of ornamental street lighting.

Send your address for big descriptive booklet including many styles and designs.

**KING
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CHICAGO, ILL.



Watrous Sanitary Soap Systems For Public Buildings

Convenient, cleanly wash-room facilities are much appreciated by the public. The Watrous Gravity Liquid Soap System is simple, sanitary, easily operated, with no moving parts to get out of order.

The one central container is easily refilled, does not clog—the simple valve in the dispenser regulates an even, non-wasting supply of soap. Ideal for all municipal or public buildings.

Watrous Sanitary Plumbing Equipment includes Watrous Duojet Closets, Self-Closing Cocks, Urinals, Drinking Fountains, etc. Write for Complete Catalog, sent free on request.

The Imperial Brass Manufacturing Co.
1209 W. Harrison St. Chicago, Ill.

IMPERIAL PRODUCTS



FRONT VIEW OF A SIDE DUMP TRUCK

Side-Dumping Motor Trucks

For convenience in handling material, it is not always desirable to have to dump the body of a motor truck at the rear. Because of this the Denby Motor Truck Company, Detroit, Mich., is using an entirely new dump body for use in excavation work. This new style of mechanical side-dump steel body was chosen because it incorporated distinctive features which adapt it especially for this service. The entire space back of the cab is available for pay load, inasmuch as the space usually needed for the hydraulic hoist is used for the body itself. In handling waste material where unit cost must be kept down, this point is most important. The body dumps away from the road without backing into loose soil. Wet clay or other similar material has a larger space from which to discharge with this type body, as the entire side forms the gate. This eliminates clogging and allows the load to dump in a long pile, reducing the amount of labor necessary for spreading. The dumping mechanism is simple and compact and gives little trouble in operation. In road building or in handling most classes of bulk materials, the side-dumping principle should be of value, as the materials can be deposited quickly and without blocking the road for additional loads.

Wood in Charge of Goodyear Good Roads Bureau

The Goodyear Tire and Rubber Company, of Akron, Ohio, has recently established a Goods Roads Bureau for the furtherance of good roads education and highway construction thruout the United States. C. M. Wood, formerly Sales Engineer for the H. W. Johns-Manville Company, has assumed charge of this new bureau.

The Goodyear Company has always been prominent in good roads education and has sought to improve highway construction and to promote good roads legislation. The Good

Roads Bureau has been established in the same spirit which prompted the company to materially aid the Lincoln Highway when assistance was needed. It is the function of the Bureau to work for the promotion of good roads, paying especial attention to seeing that hard-surfaced roads are so constructed that they will be adequate for the needs of transportation in future years, and that they are wide enough for trucks to pass without getting off the hard

surface, that there is proper road drainage, and that foundations are laid correctly.



BACK VIEW OF TRUCK SHOWING SIMPLE CONSTRUCTION

Austin Company Increases Facilities

The F. C. Austin Machinery Company is incorporated to take over the entire business of the F. C. Austin Company, Inc., the Municipal Engineering & Contracting Company, and the Muskegon plants of the Linderman Steel & Machine Company, and retains the personnel of the companies, whose combined efforts are directed towards supplying the demand for the Austin machine. F. C. Austin retires from the active management, and the President of the Linderman Company, B. A. Linderman, assumes control. The offices of the combination will remain in the Railway Exchange Building, Chicago.

The F. C. Austin Company combines with the Linderman Company plants, whose productive organization and enormous manufacturing facilities created such favorable comment during the war. This combination increases eight-fold the capacity of the present Austin output, and gives the new company what is said to be the largest capacity for earth-loading and cement-working machinery in the United States.



Live wires!

If these wires carried
25,000 volts he would
be perfectly safe

The Harco Lineman's Blanket is a new safety protector to be used around live wires and transformers.

It is composed of two thicknesses of steam-cured rubber between which fabric is inserted and then all are vulcanized together in one solid sheet, one-sixteenth inch thick and 36 inches square.

The edges are heavily beaded so that the blanket may be held in place on wires by wooden clothes pin clips.

The HARCO Lineman's Safety Blanket

PATENT PENDING

The Harco Lineman's Blanket is so pliable that it folds easily and can be carried tucked in the workman's belt. It has been submitted to The

National Electric Light Association and the Bureau of Safety of Chicago.

Write us for a detailed description and price list.

Harco Rubber Lineman's Gloves

The Harco Gloves are made from the highest grade of pure gum rubber to withstand high voltage.

We can also furnish the leather protection gloves.

Both have been approved by the above mentioned organizations and are in use by a great many of the public utilities of the United States and Canada.

Write for Safety Catalog

F. A. HARDY & CO., Safety Department

10 S. Wabash Ave., Chicago

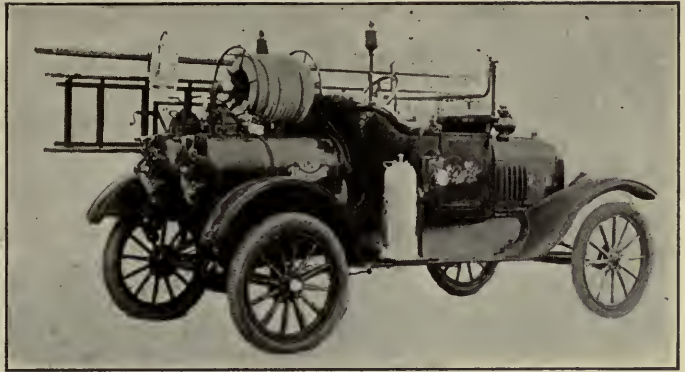
15 W. 35th St., New York

Branches: Denver Atlanta St. Paul Dallas San Francisco

"Everything for Safety"

A Light Chemical Truck for the Small Town or Suburb

Motor fire apparatus is recognized as the standard fire department equipment to-day. In the city heavy pieces of equipment are necessary, but in the suburbs or small towns or rural communities, where such a heavy investment would be an unnecessary burden on the taxpayer, it is well for the municipal authorities to consider equipping the department with motor apparatus such as that made by The Prospect Manufacturing Company, Prospect, Ohio. Almost everyone knows how to drive a Ford machine, so this chassis was chosen as the standard for mounting the Deluge chemical equipment, which is put out by The Prospect Manufacturing Company. The equipment for one standard car includes a standard Ford machine with non-skid rear tires, two 30-gallon chemical tanks, operated independently and each containing the necessary lead receptacles for operating the tanks. One 3-gallon chemical extinguisher is mounted on the running board, and one 1-quart extinguisher on the dashboard. An automatic hose reel equipped with 200 feet of $\frac{3}{4}$ -inch chemical hose, 150 feet of 5-ply red-covered hose with brass couplings and a polished brass shut-off nozzle are provided with the machine. One portable electric fire department search-light, one lantern, one crowbar, and ten buckets are also supplied, as well as a 24-foot windlass extension fire ladder in two sections. The other equipment consists of the usual material pertinent to complete fire department equipment.



TYPICAL UNIT CHEMICAL CAR FOR RURAL AND SUBURBAN SERVICE

so that this company will henceforth be known as the Champion Corporation. The natural inference from the earlier name was that their activities were limited to the manufacture of potato machinery, although municipal officials know this company through its sewer-cleaning machines, which have been used in many localities.

Elgin Articles on Street Cleaning

As announced in the April issue of *THE AMERICAN CITY* at the end of the article, "Coöperation in Street Cleaning," by Theodore Eichhorn, Superintendent, Department of Streets and Public Improvements, Erie, Pa., the Elgin Sales Corporation has recently held a competition among street-cleaning superintendents and engineers for the best article on street cleaning. The committee of award consisted of Arnold B. McStay, Commissioner of Street Cleaning, New York City; George A. Dodge, President of the Elgin Sales Corporation, and Edgar J. Bittenheim, President of *THE AMERICAN CITY*. This committee awarded first prize to the article mentioned above. Second prize was given to Charles O. Davis, Superintendent, Bureau of Street Sanitation, Milwaukee, Wis., for his article, "Careful Citizens Can Minimize Street Cleaning," which appears in this issue of *THE AMERICAN CITY*. It is with deep gratification that *THE AMERICAN CITY* is able to publish two such excellent articles on the general features of street cleaning and the need of more coöperation on the part of the public.

New York Office of Imperial Brass

The Imperial Brass Manufacturing Company has recently announced that on and after May 1, 1920, its New York office will be located in Suite 605, Longacre Building, 42nd Street and Broadway, New York City.

Kelly-Springfield General Sales Department in New York

The General Sales Department of the Kelly-Springfield Tire Company, which was formerly located in Cleveland, Ohio, has been for several months installed at 1710 Broadway, New York City, where any inquiries regarding sales should be addressed.

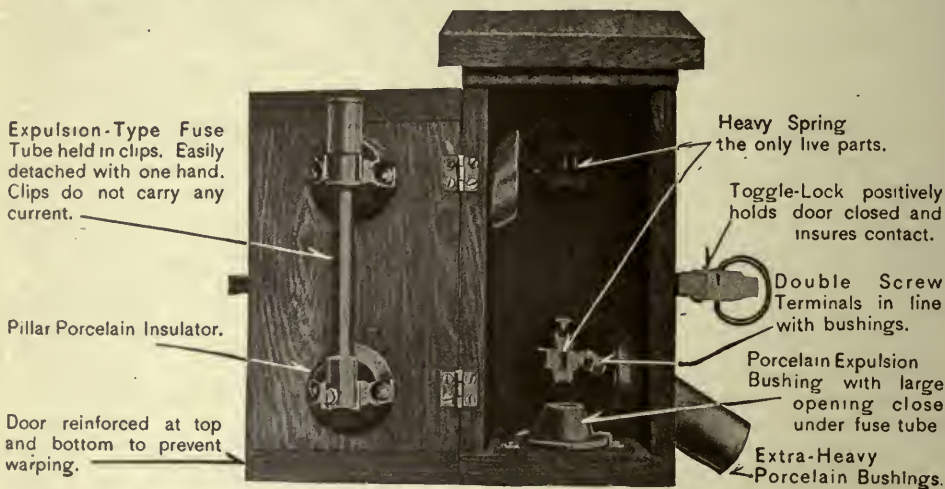
Champion Corporation New in Name Only

The great diversity of lines manufactured by the Champion Potato Machinery Company, Hammond, Ind., has led to a change of name,

Steel Fabric's New Philadelphia Office

H. D. Beaton, Eastern representative of the National Steel Fabric Company, has recently announced that the Philadelphia office of this company is now located at 502 Pennsylvania Building, Philadelphia, Pa. This company specializes in the sale of steel fabric for reinforcing concrete roads, having purchased the Highway Department of the H. H. Robertson Company, Pittsburgh, Pa., early this year.

Protect Both Your Linemen and Your Distribution Transformers with— Type OD Safety First Fuse Boxes



**Type OD
Fuse Boxes 100 %
are safe under all possible
conditions.**

Parts to be handled are automatically and completely separated from all live parts, with door open.

Reliable operation and protection to transformers on shorts assured.

Screw driver only tool necessary for installation.

Box fastened to cross arms by screws, line connections made by inserting bared ends of leads into terminals mounted on the contact fingers, directly in line with the entrance bushings. Perfect contact without any soldering assured by two terminal screws.

Re-fusing easily and quickly accomplished, without the use of fuse tongs or hook-sticks.

Doors opened and fuse tube removed with one hand. Cap at top of tube unscrewed, and fuse, consisting of fuse wire cut to length and incased in asbestos sleeving, fastened to screw binding post on cap. Fuse inserted in tube and fastened to bottom screw binding post. Tube replaced with one hand and door closed.

Westinghouse Electric & Manufacturing Co.,

East Pittsburgh, Pa.

Frazier, Ellms & Sheal Form Engineering Company

The incorporation of the Frazier-Ellms-Sheal Company has recently been announced. This new corporation will conduct a general engineering business in the design and construction of water-works, pumping and power plants, water purification and sewage disposal plants, sewer and drainage systems and buildings. The company is also prepared to conduct engineering investigations, compile reports and make appraisals. The active members of this company have been engaged for many years in consulting engineering work, but along the lines of their individual specialties. By combining their varied experience and special training they are able to offer technical service in a wide field. The offices of the company are in the Illuminating Building, Cleveland, Ohio.



**CARRYING A COMPLETE SET OF FORMS OUT TO THE
JOB BY MOTOR TRUCK**



**FORMS COLLAPSED AND REMOVED
FROM CULVERT**

Culvert Frame Saves Time in Culvert Building

High prices of labor and lumber are creating much interest in quicker and less expensive methods for building concrete culvert forms among highway officials and contractors.

The culvert frame here shown is being used

extensively on highway work. The frames are of steel, guaranteed by the makers not to bulge, buckle or sag from the weight of the concrete. They come in 4-foot sections and are set up end to end with a space between the sections if necessary, to make the required length of culvert. Four sections are sufficient to make a 30-foot culvert. The frames are adjustable both in height and width, and their use eliminates the necessity of buying and cutting up lumber for every different size culvert needed.

As the frames do not come apart, but simply collapse, to be removed from the culvert, they are very simple to use. To build a culvert, the frames are set up as shown, the lumber placed around them, not nailed, and the job is ready for pouring concrete. When the culvert is finished, a pull at one point collapses the frame. A pull at another "jack-knives" it away from the sides, so that it comes out easily. The whole process, both in erecting and removing is accomplished much quicker than lumber bracing can be built and torn out.

Culverts with fillets or square corners are built with these frames, and with the collapsing of the frames the lumber comes away in the best possible condition. The frames are known as the Storms One-Man Collapsible Culvert Frames and are made by the Storms Manufacturing Company, Crawfordsville, Ind.

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The articles and illustrations in this magazine are not copyrighted except in special cases where due notice is given. The publishers are glad to have the material used in other publications, in addresses before public gatherings and in other ways in which it can give service. It is requested only that credit be given THE AMERICAN CITY in any use that may be made of extracts from its pages. It is sometimes possible for us to lend photographs and plates for purposes of illustration. Public officials, chambers of commerce and civic organizations will find it profitable to cull from the magazine each month articles and items which have bearing on their work.

350,000

Chances for Disaster

One thousand times a day the fire departments in the United States are called out to extinguish fires. One thousand times a day there is the possibility that the alarm will be so delayed that the fire will get a start and leave families homeless, industries destroyed and even leave an entire city barren.

Delayed alarms are a most potent cause of our big fire losses according to leading authorities. Delayed alarms are unnecessary; criminally unnecessary. In most cases they are caused by one of two things. Either the fire alarm boxes were so far apart that time was lost getting to them or the telephone was used and the inevitable mistake made.

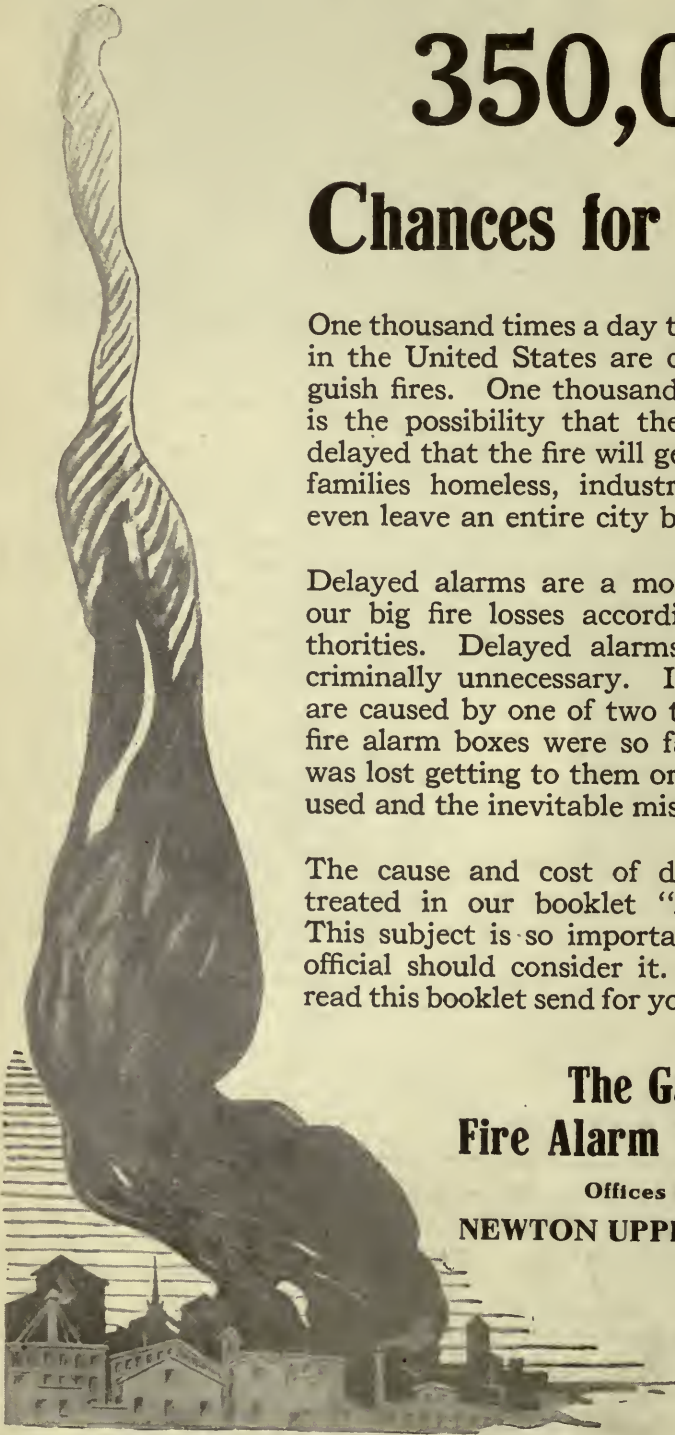
The cause and cost of delayed alarms are treated in our booklet "A Box a Block." This subject is so important that every city official should consider it. If you have not read this booklet send for your free copy today.

**The Gamewell
Fire Alarm Telegraph Co.**

Offices and Works

NEWTON UPPER FALLS, MASS.

**GAMEWELL
FOR
SAFETY**



VOLUME XXII

NUMBER 6

The American City

NEW YORK

JUNE, 1920

Increasing and Improving a New England Water-Supply

Outline of New Water-Supply for Providence, R. I., Now Under Construction

By Frank E. Winsor

Chief Engineer, Water-Supply Board, Providence, R. I.

THE water-works system of the city of Providence, R. I., now supplies a population of about 300,000 people, which number is increasing at the rate of about 7,000 per annum. Water was first furnished from the present supply in December, 1871. The water is taken from the Pawtuxet River at Pettaconset at an elevation of about 10 feet above tide-water, where it is first pumped from the river to the filter beds, is filtered and is again

pumped to the Sockanosset Reservoir, which has a capacity of 55 million gallons at an elevation of about 182 feet above tide-water. From this reservoir it flows by gravity throughout the portions of the city which are lower than about 90 feet above tide-water, and also fills Hope Reservoir, which has a capacity of 25 million gallons and is at an elevation of about 162.5 feet above tide-water. The pumps at Hope Reservoir supply water to the higher por-



BEGINNING THE CONSTRUCTION OF THE MAIN DAM, SCITUATE RESERVOIR

This view taken from the top of the stream control conduit, looking west, shows the concrete blanket, the cut-off walls and the start of the soil core

tions of the city and to Fruit Hill Reservoir, which has a capacity of 25 million gallons and is at an elevation of about 275 feet above tide-water. The high-pressure fire service is supplied from Fruit Hill Reservoir. The city's water-supply is distributed through about 435 miles of pipe lines of various sizes from 6 inches to 42 inches in diameter. The supply was unfiltered until 1905, when slow sand filters with an area of 10 acres were completed and put in service.

The Pawtuxet River at point of intake has a drainage area of about 200 square miles, upon which considerable storage has been developed by the mills for power purposes. Until within the present year the city has had no control over any storage, and in dry times has been entirely dependent upon water released by the mills for their own use in order to make up deficiencies in low stream flow. The present daily consumption is about 21 million gallons, about 15 per cent of which is used in the high-service area. Above the present intake there is a population of over 30,000 people, mostly living in mill villages, with 18 large mills.

Action to Secure New Supply

The ultimate necessity for a new water-supply had been evident to the responsible authorities for many years, and in 1913 a committee of the City Council was appointed to make an investigation. As a result of an exhaustive study by this committee, assisted by eminent engineers, legislation was enacted early in 1915 under which the Water-Supply Board was established with authority to proceed with the design and construction of a new water-supply. The general plan was decided upon and active preliminary work was begun in the summer of 1915.

The main features of the new supply are a large storage reservoir, known as the Scituate Reservoir, on the north branch of the Pawtuxet River, about 10 miles west of the city in the town of Scituate, to be formed by a main dam and dike near Kent, about 2 miles north of the village of Hope, an aqueduct about 7 miles long leading from the main dam to the present distribution system near the Sockanosset Reservoir, a filtration plant near the main dam, and appurtenant works. The necessary real estate and topographic surveys were vig-

orously prosecuted in 1915 and 1916, and condemnation plans for the area required for the reservoir and appurtenances aggregating 12,450 acres were filed in December, 1916, similar plans for the aqueduct being filed in April, 1917.

Active Construction Begun in 1919

The first construction contract was let in January, 1917, at which time it was expected to proceed promptly with the vigorous prosecution of the entire work. Owing to our country's entrance into the war against Germany, it was deemed both wise and patriotic to defer work not absolutely required by the immediate necessities of the city. Consistent with this policy, no large construction operations were undertaken during the war, and because of the uncertain conditions which have existed in the labor and material markets since the armistice, particularly as affecting long-time contracts, only a limited construction program involving one-season contracts was attempted in 1919. Because of the war the ultimate completion of the work has already been delayed fully two years.

The following are some general statistics of the new water-supply:

SCITUATE RESERVOIR

Land condemned, acres	12,547
Length of main taking line, miles.....	56
Cemetery lots within condemned area....	171
Bodies to be removed, about.....	1,800
Buildings on condemned area.....	1,195
Area of water surface, acres.....	3,600
Maximum length, miles	7
Maximum width, miles.....	2½
Length of flow line, excluding islands, miles	38
Number of islands	28
Highway to be rebuilt, miles.....	25.6
Storage capacity, gallons.....	37,000,000,000
Available daily for city use, gallons.....	85,000,000
Present daily use of city, about, gallons.	21,000,000

MAIN DAM

Length, feet	3,200
Maximum height above valley, feet.....	100
Maximum height above bed rock, feet....	180

DIKE

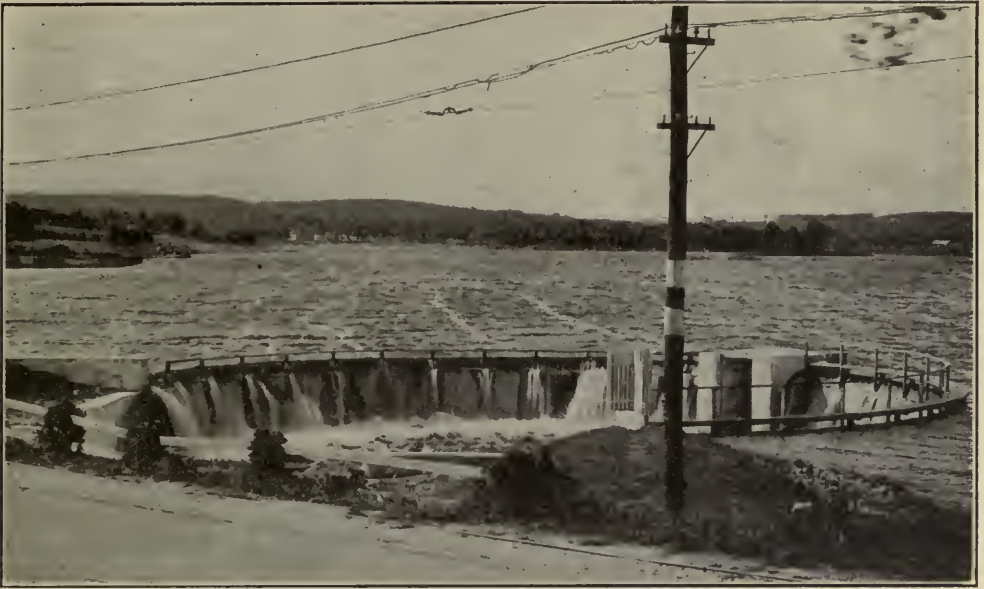
Length, feet	4,000
Maximum height above ground, feet.....	38
Average height above ground, feet.....	15

AQUEDUCT

Length of tunnel, miles.....	3.34
Length of masonry in open cut, miles....	1.57
Length of pressure pipe, miles.....	2.09
Total length, miles	7.00

Main Dam and Dike

The main dam and dike will be earth structures. At the main dam an open cut-off trench, from 40 to 60 feet in width at the bottom, will be excavated to rock for the entire length of the dam. A concrete apron about 1 foot in thickness and 30 feet in width with two cut-off walls about 2 feet high near either edge, extending longi-



THE CIRCULAR REGULATING DAM OF THE NEW SCITUATE RESERVOIR OF THE PROVIDENCE WATER-SUPPLY

tudinally the entire length of the cut-off trench, will be built on top of the rock, through which holes will be drilled into the rock, at whatever depth may be deemed necessary, and the rock foundation thoroughly grouted. It is believed that it will not be necessary to excavate any considerable quantity of ledge rock for a foundation for the concrete apron. The trench will then be refilled with selected impervious soil and subsoil, having a maximum thickness of about 80 feet, which material will also be used to form a core extending nearly to the top of the dam, gradually reducing in thickness to about 15 feet at the top. The impervious core will be backed up on each side with local sand and gravel from convenient borrow areas near the dam. The dam at its maximum height of about 100 feet from the bottom of the valley has a thickness at the base of about 650 feet. The up-stream slope will be faced with coarse material in its lower portion and with heavy rip-rap in the portion exposed to wave action, and the down-stream slope will be drained and grassed.

The dam will carry a public highway over its top. The main gate-house will be built within the up-stream slope, with access from the highway. This gate-house will be provided with gates regulating the flow to the city and down the stream, and

provision for the probable ultimate installation of turbines for power development will be made. The spillway weir will be located near the west end of the main dam, being separated from it by a knoll of ledge rock, and will be a masonry structure founded for the greater part of its length of about 450 feet on rock. The spillway channel, connecting the spillway with the river, will be excavated through rock for most of its length. The dike is consistent in design with the main dam, the details being dependent upon the depth of water against the structure and the character of the underlying material.

Construction has already been carried on at the main dam, under two relatively small contracts, and has resulted in the completion of the river diversion through a permanent masonry conduit 25 feet wide and 21 feet 4 inches high, founded upon rock. This conduit, over which the dam will be built, provides the foundation of the main gate-house. Up-stream and down-stream cofferdams, between which the excavation of the cut-off trench will be made, have been partially built, and about 500 feet of the cut-off trench west of the river diversion conduit has in part been excavated, concrete blanket constructed, grouted and refilled with impervious material. The highway traffic which formerly crossed the

river immediately above the dam has been diverted over a temporary road and bridge below the dam, and the other work which will materially simplify the prompt and rapid beginning on the construction of the main job when let, has been accomplished.

The contract for the main dam and dike will involve the handling of over 600,000 cubic yards of excavation, the building of nearly 3,000,000 cubic yards of embankment, over 20,000 cubic yards of concrete masonry, about 85,000 cubic yards of stone rip-rap, and other miscellaneous work, and will, it is expected, be advertised for bids as soon as conditions reasonably favorable to the prosecution of such work return. The use of power machinery for excavating and long trains of narrow-gauge power-dump cars for transporting materials is believed to be the best method of building the dam, the topography in the vicinity being particularly well adapted to the economic location of tracks with easy grades and moderate curvature. The reduction of hand labor to a minimum by the substitution of machine methods of construction has been carefully considered both in the design and the specifications for the work. The consolidation of the sand and gravel filling either side of the impervious core by the use of adequate quantities of water may be permitted in lieu of the rolling in layers which will be required in the core itself. The time to be allowed for completing the main dam and dike will be about four years, and the contractor will require equipment sufficient to handle not less than 8,000 cubic yards per working day during a part of this time.

Regulating Dam and Reservoir

In order to provide emergency storage to reinforce the dry-weather flow at the present pumping station whenever needed during the time which will elapse before the new supply is ready for use, a contract for the partial construction of the upper portion of the easterly arm of the Scituate Reservoir, near North Scituate, was entered into in August, 1918, and completed in the following December. A regulating dam, which will, after the completion of the Scituate Reservoir, be used to prevent the exposure of shallow, swampy areas when the main reservoir is drawn down, was built and an area of about 250 acres flooded, thus storing about 430 million gallons. The

regulating dam consists of an overfall section of concrete masonry in the form of a segment of a circle, having a diameter of 100 feet with central angle of about 280 degrees, the masonry being about 15 feet high above the natural material upon which it is founded, with wing walls and earth embankments connecting it with the Danielson Pike, which forms a portion of the dam. The masonry overfall is at elevation 284 feet above mean high water, which is the elevation of the flow line of the new Scituate Reservoir. The original surface of the ground outside the circular wall of masonry on the reservoir side was blanketed for a distance of about 75 feet with impervious material to the depth of about 2 feet.

Relocated Highways

Several contracts for highway relocation have been made, and there is already completed or under contract about 10 miles of road out of a total of 25.6 miles of new roads to be built. There will be three masonry highway bridges in addition to a highway crossing of the reservoir near the village of Ashland. The latter will involve an embankment of about 250,000 cubic yards with a large waterway. About one-half of the highways to be built are required to be finished with some form of bituminous macadam or other permanent surfacing.

Cemeteries

The construction of the reservoir necessitates the removal of many bodies from cemeteries within the area affected. Bodies will probably be removed from about 125 lots, the total number to be removed being considerably over 1,300. A new cemetery known as the New Rockland Cemetery has been built, to which over 600 bodies have already been moved.

Aqueduct

The tunnel portion of the aqueduct about $3\frac{1}{3}$ miles in length, equivalent, inside the lining, to a circle 7 feet 9 inches in diameter, will, it is expected, be located entirely in rock. There will be a shaft about 2 miles from the west end and about 140 feet in depth. A contract for this work will be advertised shortly after the work for the main dam and dike has been let. The masonry aqueduct in open-cut aggregating about $1\frac{1}{2}$ miles in length and

about 7½ feet in diameter, and the pressure pipe will be placed under contract in time to secure their completion when needed.

Filtration

It has been decided to filter the supply from the beginning of its use, but details of the design have not yet been worked out.

Construction Policy and Organization

Generally speaking, it will be the policy, so far as practicable, to place work under contract in time to secure the harmonious completion of the whole project. The entire project was estimated, in 1915, to cost about \$12,000,000, and the construction at present accomplished and under way aggregates about \$500,000 in value. During 1920 it is probable that considerable additional

work will be begun, the amount of which will depend to a large extent upon the rapidity with which the present conditions of uncertainty as to labor and materials clear up.

The Water-Supply Board is composed of B. Thomas Potter, Chairman; William A. Schofield, Henry A. Grimwood, William P. Vaughn, John Kelso, Joseph H. Gainer and Walter F. Slade, with Samuel N. Grammont, Secretary. The engineering work is under the direction of the writer as Chief Engineer, with William W. Peabody, Deputy Chief Engineer, in charge also of the Dam and Aqueduct Division; Frank E. Waterman, in charge of the Reservoir Division, and Francis B. Marsh, in charge of the Designing Division.

Another Proof That Metering Saves Money for Municipalities

THE transformation of the water-works of Middletown, Conn., from an un-metered to a fully metered system has furnished a particularly interesting record, which is presented in the 1917 and 1918 reports of the Board of Water Commissioners of that city.

It was determined in 1913 that the existing supply of water was adequate for Middletown for many years to come, provided that it was properly conserved. It appeared that practically all the increase in per capita daily consumption from 90 gallons in 1891 to 133 gallons in 1913 was due to waste. Since the manufacturing services were metered and the manufacturing consumption was estimated as about equal to 25 gallons per capita daily, it seemed evident that 90 gallons per capita daily should be an adequate supply.

The sources of supply were estimated to be able to furnish 2,300,000 gallons per day. By 1913 the city was using practically 2,000,000 per day, and there had been several times in the preceding years when the reservoirs had been nearly empty. It was believed, however, that no additional supply would be needed before 1940, if the water waste was controlled. Metering was decided to be the necessary remedy, and the engineers made recommendation that control meters be installed on the main supply pipe and that as fast as possible the services be metered and waste and leakage stopped by house-to-house inspection.

The Common Council made an appropriation for the purchase of meters, and the Water Commissioners, after considerable war-time delay in securing the venturi meter which they had ordered, installed it on the main supply pipe, meanwhile installing meters on domestic services which had shown the greatest waste. This change was not accomplished without considerable opposition and criticism—a condition which has since given place to apparent satisfaction with the size of water bills. The reduction in the consumption has been enormous, increasing with the number of meters installed. The decrease shown in the following table is estimated by the Water Commissioners to represent a reduction from 133 to 78 gallons per capita daily:

AVERAGE DAILY CONSUMPTION IN
MILLION GALLONS

	1916	1917	1918
January	1,449	1,321	
February	1,535	1,624	
March	1,492	1,624	
April	1,414	1,349	
May	1,357	1,332	
June	1,226	1,331	
July	1,614	1,143	1,355
August	1,676	1,475	1,253
September	1,619	1,240	1,226
October	1,688	1,230	1,243
November	1,602	1,195	1,258
December	1,556	1,335	1,249
Average		1,341	1,338

The report of the Commissioners for 1917 states that for November of that year 18 per cent of the consumers were paying more than on the flat-rate basis, 80 per cent were paying less, and 2 percent were paying the same.



A BATTERY OF MACHINES THAT DO MUCH TO KEEP THE STREETS OF MONTREAL IN A CLEANLY CONDITION

Street Sweeping in Montreal, Canada

Pick-up Sweepers Supplant Old Motor Sweepers and Save Money for City

IN 1919 the city of Montreal, through its road department, bought ten auto pick-up sweepers and five small gutter-sweeping machines to replace old motor sweepers, which were transformed into motor trucks for other service.

The quantity of the work done by the new Elgin machines is about the same as that performed by the old sweepers, but the five men who were formerly required to follow up the old sweepers are unnecessary with the new machines. Thus, the saving for a day for a battery of two large machines and one small gutter sweeper is two times five men, times \$3.25, equal to \$32.50, minus \$15.00, or \$17.50 per day. Of this amount, \$15.00 represents the approximate cost per day of the small gutter sweeper. The saving for the five batteries is accordingly \$87.50 per day. A further saving of about 83½ per cent is made on the carters employed for hauling sweepings, representing five carters per day at \$7.50, or \$37.50 per day. Thus, there is a total saving of \$120.00 per ten-hour day.

Before the purchase of the new machines, tests were made by R. L. Painchaud, Assistant Engineer in Charge of Roads, at which time he had at his disposal one large and one small machine. The following results were obtained:

On block pavement the area cleaned per hour by both machines averaged 11,000 square yards, the big machine alone cover-

ing 9,800 square yards. The filling of the water tank (180 gallons) varied from four to six minutes, and the distance covered with each full tank averaged 6,100 lineal feet; the area covered amounted to 5,400 square yards, and the time taken for emptying the tanks was 38 minutes. Every fourteen minutes the collecting box on the pick-up sweeper had to be dumped. The distance covered in each filling of the box averaged 2,800 lineal feet, and the average area swept was 3,700 square yards.

On asphaltic pavements, the area cleaned per hour by both machines averaged 16,200 square yards, the big machine alone covering 10,500 square yards. The filling time of the water-tank was the same, and the distance covered for each tankful averaged 8,800 lineal feet, the area covered amounting to 7,000 square yards and the time for emptying 39 minutes. Every 37 minutes the collecting box had to be dumped. The distance covered in each filling of the box averaged 9,250 lineal feet, and the sweepings picked up were from an average area of 9,800 square yards.

Difficulty was encountered at first because the chauffeurs were unfamiliar with the machines and naturally some time was required before they were broken in. After the men were fully instructed, however, the number of hours when the machines were in the shop was materially reduced, and little trouble was reported afterward.

The New "White Way" in Maysville, Ky.

Strictly Modern Lighting System Replaces Obsolete Method of Illumination

EARLY this year, Maysville, Ky., completely discarded its old street-lighting system and the mass of overhead wires which were unsightly and dangerous during storm and when it became necessary to combat fires. In a celebration closely resembling the Mardi Gras, the city staged a large parade to inaugurate the new White Way, made up of 64 units with 400 candle-power, high-efficiency lamps placed an average of 90 feet apart. The poles are "Combination" lighting and street railway tubular steel poles 35 feet and 30 feet in height, with ornamental cast iron bases, tops, span-wire bands and brackets manufactured by the Electric



THIS STREET, SHOWING THE NEW POLES ERECTED AND THE OLD POLES STILL LITTERED WITH THE NETWORK OF WIRES, IS A SAD CONTRAST TO THE ATTRACTIVE VIEW SHOWN BELOW



THE SAME CORNER AFTER ALL UNNECESSARY WIRING HAD BEEN REMOVED

Railway Equipment Company of Cincinnati, Ohio. The ornamental bracket is designed for supporting a General Electric Form 9 Novalux fixture with 400-candle-power, 15-ampere series lamps.

Of the 64 lights in the White Way, 16 are on an all-night circuit and 48 on a circuit which is shut off at 11:30 P. M. The lamps are placed opposite each other on both sides of the street, averaging about 90 feet apart. The necessary overhead circuits are attached to tubular steel poles with small individual constant-current series transformers at the top of the poles, and secondaries concealed in the poles and brackets.

The entire cost of installation was borne by

the Maysville Gas Company, the only return being the annual rental. With the increase in number of lamps, the city's bill will be between \$2,000 and \$2,500 more than under the previous contract, though the price per lamp of all of the 400-candle-power lamps was reduced \$5. This new construction replaces the old pole line and distribution installed in 1903 and makes a complete clean-up of the down-town business section.

The main primary feeders were changed to a joint pole line with the C. & O. Railway, with branch mains across town in alleys to large lighting and power trans-

nance rate on signs and windows thus connected, on the basis of watts connected but metered at the plant. This plan is as yet only at the tentative stage.

A very interesting program was instituted for the première of the White Way. City officials, members of the Council, Chamber of Commerce, and Board of Education assembled in carnival costumes at the Boys' Band Stand, where a ground signal wire run from the plant had been connected to a switch in plain view. The crowds were able to compare the old street lighting, darkness, and the new White Way.

The beautiful white globes of the new



A NIGHT VIEW OF MAYSVILLE, SHOWING THE NEW WHITE WAY

former banks in the center of each block. All commercial secondaries are thus run into the rear of all buildings in the business section. This enables the city to do away with a mass of wire running along the main street and greatly adds to the attractive appearance of the business district.

On the sides of the tubular steel poles opposite the series circuits are vacant spools on which it is proposed to run electric sign and show window circuits controlled from the power plant, to be switched on and off at the same time as the White Way. It is planned to have a flat current and mainte-

system produce a soft, even light entirely devoid of glare. The type of unit is the very latest and is used extensively in larger cities throughout the country. The earlier system used in White Ways consisting of cluster units was thoroughly investigated by the committee, and because it is becoming practically obsolete in modern lighting was turned down for this installation. The new system is strictly utilitarian and not spectacular, the design of the glass canopy being such that practically no light goes skyward, but all the illumination is thrown onto the sidewalk and building fronts.

Electrically Operated Pumping Plants in Indiana

By G. C. Blalock

Instructor in Electrical Engineering, Purdue University, LaFayette, Ind.

EDITORIAL NOTE.—According to available records there are 206 public water-works systems in the state of Indiana; 76 of these, more than one-third, are operated partially or wholly by electricity. During the past winter and spring 27 of these plants were visited by members of the Engineering Experiment Station staff of Purdue University with a view to ascertaining the present status of electrical operation of such plants. The results of this investigation, with other pertinent data, will appear shortly in the form of a bulletin issued by the Experiment Station.

THE electrically operated pumping plants in Indiana described and summarized in this article supply water to communities ranging in population from 500 to 25,000 and were found to be operating under a variety of conditions.

Fifteen plants used some form of elevated storage—tank, standpipe or reservoir; six were provided with compression tanks, the pressure being automatically controlled by pressure-gauge relays; the remaining six had no provision for storage, but maintained direct pressure by continuous operation of the pumps. This probably represents in a general way the distribution as to types of plants over the state as a whole.

About 20 per cent of the plants visited made use of deep-well pumps—air lift or displacement. The remainder used surface pumps, though in many cases the pumps were placed in pits from 4 to 15 feet below ground level in order to reduce the suction lift.

The most commonly encountered source of water-supply was the drilled well, 6 to 10 inches in diameter, and from 100 to 300 feet in depth. In a few cases the supply came from streams or spring-fed reservoirs, but these were rather exceptional. The water from wells appears to be, in general, clear and pure, requiring no outlay for purification equipment. In most localities the water stands from 10 to 20 feet below ground level, but in a few places the water flows to the pump under sufficient head to eliminate entirely the necessity for priming.

Centrifugal pumps and triplex displace-

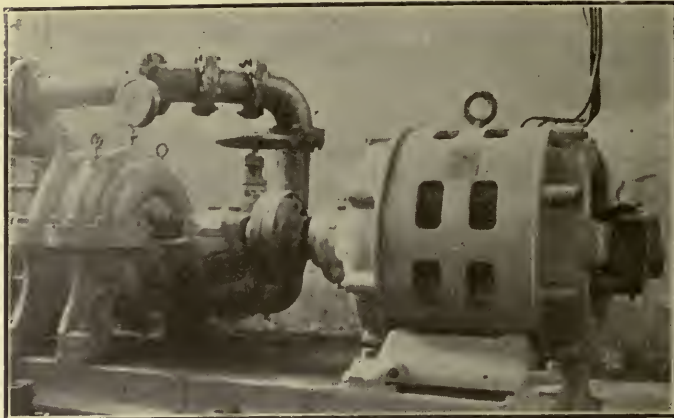
ment pumps were encountered in about equal numbers, and the plant which contained neither of these types was exceptional. One rotary pump was observed handling the second stage of a two-stage system, and the city of LaFayette has three direct-connected, motor-driven propeller pumps forming the first stage of a two-stage system, the second being handled by steam pumps. These, however, are held for emergency use, the first-stage pumping being normally done by air lift. Also, in one case the first stage was handled by motor-driven deep-well pumps, and the second stage by steam pumps. In 75 per cent of the plants inspected, however, the single-stage system was used.

Alternating current energy was utilized in practically all cases, either because direct current was not available or because the alternating current motor is cheaper, more rugged, and requires less attention. Various types of alternating current motors were found to be in use, however, the choice depending chiefly upon type of pump to be driven. In most cases the available energy supply is 60-cycle, 3-phase current, and the choice lies between the squirrel cage and the wound rotor types of induction motor, the former being used for driving centrifugal pumps, where the starting load is light, and the latter for driving displacement pumps, where the starting load is relatively heavy. Exceptions were noted, however, to this general rule, and in one case synchronous motors were found giving very satisfactory services. Single-phase, 25-cycle motors were encountered in one plant, the energy being obtained from an inter-

urban railway transmission line which passed through the town.

The pressures in use for domestic service were found to range from 25 to 90 pounds per square inch, the average being about 40 pounds, corresponding to a head of 92 feet. In many cases provision is made for raising this pressure for fire-fighting purposes to 90 or 100 pounds by cutting off the storage and bringing a special high-pressure unit into service. It

is not uncommon to find steam pumps used for securing the extra pressure needed for fire service, though the motor-driven fire service pump is popular in localities where auxiliary steam equipment would be expensive to provide and maintain. There appears to be a growing sentiment in favor of securing the extra pressure by using a portable pump at the location of the fire, rather than by boosting the pressure over the whole system, thereby making both mains and plumbing liable to damage or even complete failure at a time when such failure would be



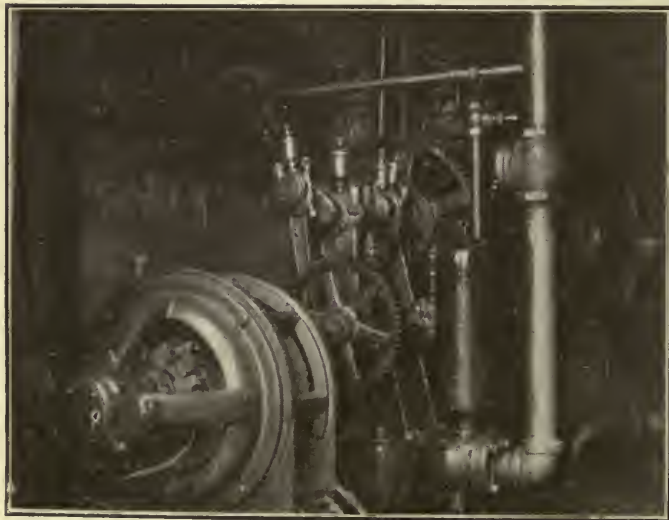
A FIRE SERVICE SET AT NORTH MANCHESTER, IND.

This set consists of a 50-h.p. Westinghouse motor direct-connected to a 520-g. p. m., 2-stage Alberger centrifugal pump

most serious. This method also eliminates the extra demand for water at service connections during the high-pressure periods, when the greatest possible supply should be available for fighting fire.

The average pump capacity provided for domestic service appears to be about 200 gallons per minute, per 1,000 population, but this figure is not of very great value, since the capacity required depends very largely upon local conditions and may vary widely for towns of the same population. Also, the system used has considerable influence upon the pump rating. A direct-

pressure system must have sufficient capacity to supply the peak of the load, while in a storage system the pump needs to supply only the average demand, anything above this being drawn from the storage. The tendency is to provide too much rather than too little capacity, in order to be on the safe side and to provide for future requirements. The pumping units designed for special fire service average about 250 gallons per minute pump capacity per 1,000 population. These units also provide reserve capacity for abnormal demands other than for



PUMPING UNIT ON A DIRECT PRESSURE SYSTEM AT MOORESVILLE, IND.

Unit consists of a triplex pump direct-connected to a G. E. $7\frac{1}{2}$ -h.p. induction motor

fire service.

Reported Conditions

Town officials and operating men expressed themselves almost unanimously as well pleased with the results obtained through use of electrically operated equipment. Appreciation of the greater convenience and decreased operating expenses was especially marked in places where the pumps were previously steam-driven. One plant was visited in which steam operation had been resumed after a trial of electric operation, but no one available at the time could give an adequate reason for the dissatisfaction with the electric drive.

Another case of dissatisfaction was encountered where a direct-connected, motor-driven, centrifugal pump was giving unsatisfactory service, though no blame was placed upon the motor itself. The pump was obviously not designed for the conditions under which it was working, and the result was an energy consumption very greatly out of proportion to the work done. Plans were being made to replace the centrifugal with a triplex pump, though it appears likely that a change in impellers would have accomplished the same result. This serves to emphasize the necessity for using great care in specifying a centrifugal pump for a driven application, in order that its characteristics may be suited to the work it is expected to do.

Numerous cases of minor troubles with the equipment were reported. Of those directly chargeable to electric operation, the only ones of serious import were those due to lack of adequate protective devices between motor and line. Some of these involved no serious consequences, while others involved considerable expense and inconvenience, as well as fire risk. It would appear that the necessity for adequate protection of the motor and control circuits is not generally appreciated. The cost of such protective apparatus is not great and will soon be repaid through decreased repair bills and greater reliability of the equipment. Troubles were reported due to lack of reliable low voltage and no-voltage cut-outs, and also to lack of proper protection against lightning. Good lightning arrester equipment properly installed is absolutely essential where power is secured from a transmission line and is the only means of preventing damage, which may vary all

the way from a breakdown of insulation in one or more coils to destruction of the entire electrical equipment.

Next to having the apparatus itself, it is of importance that attendants should understand the significance of the protective devices. One plant was visited where no voltage protection was provided, but a former attendant had decided that by wedging the starting handle in the full-on position he could start the pump from the power station and save himself a half-mile walk. Unfortunately the motor windings did not survive the initial experiment, but had to be entirely replaced.

The most frequent source of trouble other than electrical appeared to be due to freezing in severe winter weather. Bursting of pump cylinders was reported in numerous instances. In some cases these breaks had been repaired by welding, in others the cylinder had to be replaced. Troubles from this source can be charged only to neglect in providing some means for keeping the temperature sufficiently high to prevent freezing.

The installation of cheap equipment invariably results in troubles due to excessive wear and breakage; and poor judgment in the selection and use of equipment augments the difficulties along this line. In one plant the first stage was handled by an air lift, and the second by a cheap rotary pump. The latter was driven at such high speed that it handled water faster than the air lift could supply it, so a portion was bypassed and pumped over again. In addition, the wear on the impeller was so great as to necessitate its renewal two or three times each year.

Troubles due to flooding sometimes occur in plants having the pumps located in pits. Unless the motor windings have been thoroughly waterproofed they are sure to be more or less permanently damaged, with consequent shortening of their useful life, although the damage may not be such as to require immediate rewinding.

Improper alignment of pump and motor causes undue wear and results in decreased efficiency and increased maintenance cost. The same cause sometimes results in broken rods in case of deep well pumps.

Corrosion and rapid wear due to sediment in the water being pumped were reported in one or two instances.

The practice of selling water by meter

appears to be rapidly superseding the old flat-rate system. Of more than 13,000 service connections reported, nearly one-third were metered. Four systems were entirely metered, and only two had no meters at all. Many towns are changing over to the meter system as rapidly as circumstances permit, and expect to have all connections metered within a year or two.

Only six of the towns visited had provision for metering the pump discharge, despite the obvious advantage of having this means of checking the performance of the pump and motor. With a watt-hour meter on the input side of the unit, and water meter and pressure gauge on the output side, the duty and over-all efficiency may readily be determined at any time and any marked drop detected and accounted for. A centrifugal pump needs particularly to have its performance checked to avoid the marked drop in efficiency which occurs when the impeller is not properly designed for the conditions under which it is working. The substitution of an impeller of slightly different design may effect a saving which will pay for both meter and impeller within a comparatively short time.

Operating Records

It was found rather difficult to obtain accurate records of plant operation and costs, particularly in the smaller towns. Combined power and pumping plants frequently do not provide separate meters for measuring the energy supplied to the pump motors nor divide the operating costs equitably between the power and pumping departments of the plant. Where energy is obtained from sources not owned or controlled by the interests operating the pumping plant, the meter provided often includes the energy used for street lighting, station lighting and heating, or other purposes, and, as previously mentioned, it is not often that provision is made for measuring and recording the amount of water pumped. The data obtained therefore involve estimates in many cases and should be considered as indicating plant performance in a general way only.

Data for calculating energy consumption per 1,000 gallons of water pumped were obtained for 14 towns. In kilowatt-hours per 1,000 gallons, this energy consumption ranged from a minimum of 0.20 to a maxi-

mum of 3.28, giving an average value for the 14 towns of 1.31.

Since there is considerable variation in the total head against which these pumps are working, a better measure of performance may be obtained by reducing the figure given for each plant to a basis of 100 foot total head. This gives values ranging from 0.125 to 1.96, with an average of 0.90 k.w. hr. per 1,000 gallons per 100 foot head.

The operating cost per 1,000 gallons was found to range between 0.88 and 16.83 cents, with an average value of 4.97 cents. Reduced to a basis of 100 foot head, this average becomes 3.74 cents per 1,000 gallons per 100 foot head.

Tests

Two plants equipped with meters for measuring the pump discharge were selected, and tests were run, with two objects in view: first, to determine the duty and over-all efficiency of the pumping unit, thus obtaining a basis for figuring energy costs per unit discharge; and, second, to determine the nature of the power demand and thereby establish the degree of desirability of pumping loads from the central station point of view. The test in each case extended over a period of 24 hours, and in addition to kilowatt-hour and water meters a graphic recording watt meter was used for measuring and recording the power demand.

The unit tested in the first plant consisted of a 2½-inch, single-stage, 175-gallons-per-minute, centrifugal pump, driven by a 15-h.p., squirrel-cage type induction motor, pumping continuously against the direct pressure of the mains. A total pumpage of 11,900 cubic feet was observed—an average rate of 61.8 gallons per minute—against a pressure of 40 pounds per square inch with input of 9.38 h.p., giving an over-all efficiency of 16.7 per cent. Estimates based on pipe friction tables give about 10 feet loss of head in elbows, valves, meter, etc., between the pump intake and the point at which the pressure gauge was attached to the main. Including this loss of head raises the efficiency about 2 per cent. This still gives a very low over-all efficiency, but it should be noted that the pump is discharging but little more than one-third its rated capacity, this resulting in the motor's run-

ning at considerably less than its normal rating. Neither pump nor motor can therefore be expected to show very good efficiency. It is evident that this unit is not operating under the conditions for which it was designed, resulting in high energy consumption per unit output.

The unit tested in the second plant consisted of a 4-inch, 2-stage, 380-gallons-per-minute, centrifugal pump, driven by a 25-h.p., squirrel-cage type induction motor, pumping to mains, with stand-pipe storage, the frequency and duration of pumping period being regulated by a pressure-gauge relay and an automatic motor starter.

Three runs of approximately two hours each, at an average pressure of 55 pounds per square inch, gave a pumping rate of 350 gallons per minute, with an input of 32.25 h.p., showing an over-all efficiency of 38 per cent. Estimated loss in head due to friction amounts, in this case, to about 35 feet, and inclusion of this loss as part of the total head raises the efficiency about 10 per cent. The over-all efficiency in this case checks closely with manufacturers' estimates for this size and type of unit, and the unit is evidently well adapted to its work.

The conclusions arrived at as a result of

investigation and study of the present status of electricity in pumping plants of Indiana may be summed up as follows:

1. Where local conditions have been carefully considered and the type and capacity of pump and motor which best suits those conditions intelligently selected, electrically driven pumps have proved highly satisfactory; they have been found to be easily handled, convenient, reliable and economical.

2. While the motor itself is very unlikely to give trouble, and transmission lines have proved quite reliable, yet it appears advisable to provide some auxiliary source of power. The automobile type gasoline engine appears particularly well suited to this purpose.

3. The energy consumption in properly designed plants may be expected to vary from 0.2 to 2.0 kilowatt-hours per 1,000 gallons per 100 foot head, with 1.0 as a fair average.

4. The operating expenses for an electrically operated plant are low, considerably below those for a steam plant and appreciably below those for an internal combustion engine plant.

5. The pumping plant load is a desirable one from the central power station point of view.



A CONVENIENT AND SANITARY TRAVELING MARKET IN WHICH PRODUCE IS PROTECTED FROM FLIES AND DIRT

The Volume of Laboratory Work Necessary to Control a Public Water-Supply

By C. K. Calvert

Chemist, Indianapolis Water Company

THE discussion comes up repeatedly within water-works organizations as to just the amount of stress to be laid upon volume of laboratory examinations of the supply.

Dr. Cobb, before the 1919 meeting of the Indiana Sanitary and Water Supply Association, emphasized the value of the sanitary survey over laboratory work in rating new supplies and in holding established ones up to standard. It is possible for pollution to occur in such small amounts as to be undetectable by the usual laboratory procedures. It is just as possible for even gross pollution to occur in such a manner as to escape the most careful sanitary survey. Regardless of the watchfulness of the personnel, laboratory examinations cannot be eliminated with safety.

What Actually Controls the Volume of Work

The volume of laboratory work is controlled by two opposites: how small an amount will provide safety; and how large an amount can be afforded. Both factors are controlled largely by the size of the organization. No definite amount of money or per cent of total outlay can be established as a minimum requirement, because the elements affecting the character of the raw water and the methods of improvement differ as widely as the cost of construction and operation of individual plants. It seems possible, however, to establish loosely the volume of work required on a basis of the relative value and importance of laboratory tests.

Intensive Work for First Year Essential

Prior to the building of a water-supply system and during its early years, no pains should be spared to determine the character of the water to be used and of other sources available or likely to contaminate it. The information should include chemical and bacteriological data with partiality shown to neither. Over a period of at least a year extensive tests will, in most cases,

develop simple tests whereby one water may be distinguished from another and an admixture in any considerable amount be possible of detection. The three tests most often useful in this connection are alkalinity, chlorine and nitrites. When such tests are known, laboratory work may be simplified, making only such determinations as will detect changes in the source of supply. This applies especially to deep-well supplies, which are usually of quite different character from the waters found nearer the surface. By some chemical test a break in the casing admitting near-surface water may be detected before it has developed to the extent of producing a bacterial contamination.

Bacteriological Examination Important

Even in such a simple system it is also desirable to know that the quality is maintained in the distribution system. Perhaps the danger of contamination from industrial plants is as great or greater in the small town than in the city.

In this sized plant it is not possible to employ a man to devote his entire time to laboratory activities, and it usually falls upon an already over-busy superintendent to obtain his own laboratory information. By using, in taking samples and doing media work, a man whose entire time is not wholly occupied otherwise, he may in an hour a day make bacterial counts and B. coli tests on five or ten samples and make one or two titrations to keep in touch with the general characteristics of the supply.

Most plants of small size drawing acceptable water directly from wells are making no tests whatever, and the supply is tested only at most a few times a year. If occasional contamination is found it is a matter of chance. In every plant, regardless of size or simplicity of operation, daily tests should be made even though they indicate satisfactory water month after month and year after year.

The following tests are recommended as

a minimum of laboratory work for the simplest plant: the count at 37°; the determination of *B. coli* in suitable amounts; and one or two chemical tests as indicated by a study of the individuality of the water.

The *B. coli* test should be made on at least 50 cc. of sample. This amount may be examined in one portion, but it is preferable to divide it into two or five parts. The completeness of the *B. coli* identification is a mooted question. Obviously the most careful work is desirable. However, the presumptive test made on 50 cc. of water gives better information than a more ex-

of water, a sample should be examined before and after treatment. In this case, and especially if the water is not clear, the distribution samples are of increased importance on account of aftergrowths which may occur from those organisms enclosed and protected by particles of suspended matter. The samples taken before sterilization must be examined for total count and *B. coli* in suitable and very much smaller amounts than the well or sterilized water, in order to give accurate information as to the concentration of contamination and the extent of subsequent purification.



THE BACTERIOLOGICAL ROOM OF THE INDIANAPOLIS WATER COMPANY LABORATORY

haustive identification on a single 10-cc. portion.

These tests should be made on a sample of the water as it goes to or leaves the pumps delivering the water to the consumer, and on samples taken at more than one point on the distribution system. These points should be chosen with due regard for the location of possible contamination from industrial plants.

Watch for Aftergrowths in Chlorinated Water

The simplest type of purification is sterilization of the water with some form of chlorine. Only very clear waters, reasonably free from organic matter, are easily treated in this manner. Whatever the type

Laboratory Work Increases When Plant is Enlarged

Usually an increase in the size of the plant makes it necessary to draw on more polluted sources in order to produce an adequate volume, and this means that greater purification must be provided, involving the use of more complicated physical and chemical procedures.

Chemical Tests Valuable Aid to Proper Coagulation

When coagulation is employed, the laboratory must stand ready to make accurate determinations of the alkalinity and carbon dioxide. It is rarely the case that additional alkalinity is required in coagulating with alum, but when iron is used the re-

action is of more importance. Provision must be made for the estimation of the amount of suspended matter and often its degree of fineness. If the sedimentation basin is large or the raw supply impounded, Sedgwick-Rafter examinations for micro-organisms are desirable during the warmer months in order that proper precautionary measures may be taken as the organisms approach the danger point. In our own plant last year we believe a scourge of *Asterionella* was avoided through use of information obtained from such examinations.

The Value of Other Chemical Tests

Oxygen dissolved and consumed tests sometimes are advantageous, but usually they cost more in time and trouble than they repay.

In cases where softening of the water is effected, the chemical work required is much increased. Not only must the water be examined more frequently for hardness or excess chemical, but the composition of the material purchased must be known.

On filtered water chemical tests are of slight value. After sterilizing, tests should be made to indicate the presence or absence of residual chemical. The O-tolidin test for free chlorine is simple and suitable under certain circumstances. The potassium iodine-starch test, when used with acetic acid, is more accurate and may be used on all types of potable water.

Where water is used for special industrial purposes, the water-works laboratory should be able to furnish information as to the average chemical composition and to aid the consumer by suggesting methods of treating it if required.

The old-line sanitary standards, based on the chlorine, nitrate, nitrite and ammonia determinations, have long since been shown to be of no value in detecting pollution or rating a water-supply, though the tests are often found prescribed in medical books, etc.

Sanitary Surveys Aid the Laboratory

Not only is it required to know the daily bacterial and *B. coli* content, but something very definite of the conditions on the watershed feeding the supply. A report of a careful sanitary survey should be at hand

with bacteriological findings to indicate the extent of the contamination and its possible effect at the intake.

The Laboratory Checks Operation of Entire Plant

The changes taking place in the precipitation basin are of value not only in connection with algae growths but to indicate the value of each section of the basin.

In mechanical plants the operation of individual filters throughout the day is more erratic than in slow sand plants, and average figures on the combined filter effluent give better information as to the operation of the plant than samples from each unit. However, peculiarities of each unit's performance should be known.

The establishment of the Treasury Standard has placed in the hands of city councils and boards of health a tangible measure of the purity of water which is being applied to all public supplies. It was established for the control of water stored on interstate carriers and has been expressly stated by the authors not to apply to public supplies. Nevertheless it has been ignorantly and maliciously applied indiscriminately, regardless of its fitness for the case at hand. If it could be used as a standard in rating wells, many of our cities would experience a reduction in general intestinal disorders. On account of the existence of the Treasury Standard, however, it is necessary for the laboratory to know whether or not the supply is meeting it, and if not, why, for it is amply evident that the standard can be met in most plants.

In most water laboratories the Standard Methods of the American Public Health Association are followed more or less closely. It is unfortunate that uniform methods are not universal. The fact that they are not followed indicates that present methods are faulty or that no one scheme of examination can meet with approval in the various laboratories.

Though the routine work of a water laboratory may become burdensome and tiring for want of variety, it is always possible to keep on hand some line of new work of interest in connection with operation.

The Cure for Vandalism in City Parks

New York's Experience Shows the Need for Special Park Police

By Joseph P. Hennessy

Park Commissioner, Borough of the Bronx, New York City

THERE is very little protection of park property in the city of New York.

As a result, vandalism is often rampant, and an unoccupied park building invites robbery and destruction, as does an unoccupied and ungarded building in any other part of the city. In the parks, trees and shrubbery are maliciously destroyed, benches are upset and broken, iron fencing is smashed, and in summer refuse and litter are conspicuous. Lawns are wantonly destroyed, and if some people had their way altogether, there would be no lawns—only unsightly and unsanitary surfaces.

In Bronx Borough there is more park area than in all the other boroughs combined, the total acreage being 4,169.11. Parks are a priceless municipal asset, and it is impossible to estimate how valuable the parks of The Bronx may become. Pelham Bay Park, consisting of 1,756 acres, has a large water-front. A part of this park was used by the Navy Department for a naval station during the war. Buildings were erected upon it at a cost of about eleven million dollars. These buildings are now in process of demolition.

Previous to the enactment of the present city charter in 1897 there was a well-equipped park police force, especially trained, and it is an admitted fact that since the amalgamation of this force with the regular police force the parks have suffered more and more for the lack of a force specially appointed and maintained to deal with park problems. Theoretically the regular police force protects the parks now; prac-

Only recently a New York high school pupil and a band of younger boys were found taking away a part of some park playground paraphernalia under cover of darkness. Fortunately, they were caught, and their parents were summoned to court and fined \$5 each. Their appreciation of the situation may be gathered from the fact that after they had paid the fines they asked to have the playground paraphernalia that was detached and stolen surrendered to them on the theory that they had paid for it.

tically, however, the parks have little protection. This is not due to lack of desire to help, on the part of the police, but to the system. In instances where it is necessary to call for special police assistance to meet some particular situation, quick and effective response is generally received, but the parks of The Bronx are not policed except in incidental or casual fashion. The fact is overlooked that some of our parks include paths and roads that constitute to a very large extent highways, yet, with one or two exceptions, no Bronx park has within its limits an exclusive police post.

Other communities have in their public parks a police force responsible to the park authorities. This, in the writer's judgment, is the way it should be; then responsibility would not be divided. The destruction of park property amounts annually to a very large sum. This amount, if saved,

would go a long way towards paying the expenses of a park police force, and at the same time would return to regular city duty the few police that are on duty in Central and Prospect Parks.

Some particular instances of wanton destruction and rowdiness may be cited as typical of the present menace to city property and public welfare. Within ten days last summer more than 200 flowering plants were pulled up and thrown on the ground in one section. At a prominent entrance to one park crowds of noisy loafers gathered and annoyed those who wished to enjoy the park. Last summer it cost \$100 a day to gather up newspapers, bottles and other

refuse left on park lawns by old and young, and this will, undoubtedly cost \$125 a day during the coming summer.

Some of the city magistrates show a remarkable leniency towards violators of park ordinances. For 106 convictions for various offenses in one month in 1919 the aggregate fines were only \$165. In some instances offenders get off scot free because they do not respond to summonses. In speaking of the leniency of some of the magistrates one police officer stated that a certain magistrate would not fine the offender because there were no "Keep Off" signs on the park plot. As a matter of fact, there was a "Park Property" sign on the plot in question—placed there with the idea of eliminating as far as possible the objectionable "Keep Off" sign. In this locality the department was endeavoring to beautify a number of park plots with flowers and plants.

At one time last year the whole stretch of one of our parks was littered from end to end with paper—a distance of about three-quarters of a mile on either side of the main road or highway. It took practically the entire force of park laborers a whole day to pick up this paper. Breaking bottles is a vicious form of rowdiness because it often results in personal injury, and the pieces of glass when thrown on the roadway are a menace to automobiles. In a period of one week more than 1,000 broken bottles were picked up in an area of 10 acres.

A report from a foreman in Bronx Park reads like an index of events in a bad boy's diary—wires cut on backstops and around tennis courts; locks put out of commission; ropes stolen; a manhole stuffed with a beer can so that the ball field was flooded; brick ripped up from the main road and deposited on the ball field; all the park benches turned over every night. Some of the most annoying of these events were acknowledged in notes signed by the "Mystery Club." Last winter in the evenings a park with steep grades was practically monopolized by coasters who used their sleds on paths, stairways, lawns and walks, on the highway,

For chopping down a tree in Van Cortlandt Park a man was fined one dollar. It takes a long time for a tree to grow, and a dollar fine does not seem commensurate with the offense.

across trolley tracks—in any place where the danger to themselves and to park pedestrians was the greatest. Some evenings there were about 3,000 out with sleds in all parts of this park until nearly midnight. In vain they were requested to go over to the ball field, but this they would not do—apparently because there the sport was too nearly harmless.

The park force is used wherever possible, to repress the misuse of the parks. While some of the men have the power to serve summonses, it is not always practicable to do so, as it takes them away from their regular work, and if done to any large extent would leave the parks absolutely uncared for and unprotected. It is evident that the conditions demand prompt relief.

In Other Cities

How do other cities prevent such a situation?

The parks under the jurisdiction of the Essex County Commission, Newark, N. J., have a police force consisting of some 40 men, who get good salaries. Philadelphia also has a substantial park police force, and the Commissioners experience no difficulty in preserving

the parks from vandalism and disorder.

The Metropolitan Park Commission in Boston has a large police force. They are furnished with uniforms and equipment at the expense of the Commonwealth. On the other hand, James B. Shea, Chairman of the Park Recreation Department of Boston, not connected with the Metropolitan Park Commission, writes as follows:

"Through political manipulation, the State Legislature had this park force incorporated into the regular police force, which now patrols and attempts to protect the property of the department. The results are very unsatisfactory, as vandalism is rarely punished, and the police force being independent of park officials, the work which it does is simply perfunctory."

In St. Paul, Minn., the park police are independent of the city police and are directly under the jurisdiction of the park department, with full authority to issue summonses or make arrests and prosecute in court.

Lyman O. Newell, Commissioner of Parks, Cleveland, Ohio, writes:

"For years the parks were patrolled by park police in uniform, with full police power. This was satisfactory, but changes were made to comply with the financial condition of the city. I would recommend a force of police, uniformed, with police power, who would constantly be in touch with and under supervision of park officials."

Cincinnati has its own park police. The city of Louisville has what is called a park guard, under captain and sergeant. The men are uniformed in cadet gray. They number from 25 to 30, as circumstances warrant. Milwaukee has about 39 patrolmen and one captain.

In Chicago there is quite a large police force under the direction of the West Chicago Park Commissioners, the South Park Commission, and the Commissioners of Lincoln Park. The parks in West Chicago embrace 800 acres and 25 boulevards, totaling 32 miles. They are policed by 120 men, under direct control of the commissioners. The police force of the South Park Commission is about 200. It controls all the traffic on the boulevards throughout the park district, and handles all permits for the construction of buildings fronting on the boulevards, and the various other operations of those having permits for the use of the

boulevards and the parks of the city.

Park Police Bill Introduced in New York

The above gives a fair impression of what other cities are doing for park protection. For years in the city of New York the question of better park protection was taken up from time to time by one park commissioner or another, but nothing in the way of betterment resulted. For the last two years, however, the present park commissioners have been active in seeking to arouse public appreciation of the situation. Legislation, of course, was necessary, but the time appeared not ripe for it, from the point of expediency in one respect or another. The present Park Board has, however, made great progress in having secured Mayor John F. Hylan's consent to the introduction of a bill at Albany, providing for park police, with the understanding also that it would have the approval of Police Commissioner Enright.

The bill was introduced too late at the recent session to secure its passage; but it is the intention to reintroduce it early at the next session, when it will have behind it a force of strong public sentiment that can be created for it by that time through organized effort. Its introduction will mean, incidentally, cleaner and better parks.



WADING POOL IN O'FALLON PARK, ST. LOUIS

Methods of Preventing the Destruction of Asphaltic Pavements by Heavy Motor Trucking

By Monroe L. Patzig

Consulting Engineer, Des Moines, Iowa

FIVE years ago there were but few heavy trucks in general use for commercial purposes. To-day there are more than 953,000 in Iowa alone.

Paved streets no doubt have had a great deal to do with the fast-growing demand for commercial cars, but the effect that this growth has had upon our pavements has been a serious one to those in charge of road and street construction. Bituminous pavement construction that was perfectly satisfactory five years ago may to-day be entirely unfit for present traffic.

Where traffic has been concentrated so as to follow single lines of travel, paths have become worn in concrete, brick, bitulithic and wood block pavements. Asphaltic concrete, sheet asphalt and bitulithic have shown tendencies to push or roll.

An Examination of Pavement Failures

These conditions are not only true in Des Moines but evidences of the same conditions exist in all our large cities. In some of these towns where traffic has for a great

many years been congested, with heavy teaming over the hard surfaces of concrete, brick, stone, wood block and bitulithic pavements, the tendency to form ruts or ridges has been apparent. But with the increased use of heavy motor cars the same tendency to rut the hard pavements and to cause rolling or shoving of the soft pavements, has been carried onto many streets that have never before shown such defects.

That this is not caused merely by the general growth of the cities and the shifting of traffic to certain streets, can be demonstrated by some streets in Des Moines and a thoughtful analysis of what takes place on the pavement when horse-drawn or motor-drawn vehicles pass over it.

Examples of damaged brick, concrete and bitulithic pavement have been noted in Des Moines, particularly where there have been narrow roadways upon which hauling was confined to a single line of traffic, the disintegration being caused mainly by the pounding effect of the traffic. There are a number of examples also of sheet asphalt pavements that have pushed or rolled under the tractive force of motor vehicles. It was the disintegration of this type of pavement to which the writer's attention was first forcibly turned. At no time before the heavy motor truck age were these difficulties experienced.

The particular pavement which was first noted had been carefully constructed under a most rigid inspection. It was considered an ideal piece of work when completed, but within two years many exasperating waves



THIS THREE-YEAR-OLD BITULITHIC PAVEMENT HAD A MIXED-METHOD SEAL COAT WHEN CONSTRUCTED, BUT DEVELOPED THE DEPRESSIONS SHOWN, WHICH WERE CURED AS DESCRIBED IN THE TEXT

and depressions developed and repairs were necessarily made. Upon making these repairs it was determined that the paving material had bunched up and actually moved along over the base. The movement thereof had actually polished the concrete foundation. While this may be partly due to the construction which was specified for this piece of work, it is believed that the changed traffic had much to do with it.

At the same time that the public was irritated by the conditions on this street, similar defects appeared on Mulberry Street, although the pavement was then about five years old and had been in perfect condition until that time. Other streets showed movement of the wearing surface to a marked degree at about the same time, but all of them along routes taken by the heaviest motor-drawn vehicles. A careful consideration of this matter has also revealed the same circumstances and results in practically all of the larger cities.

What Has Caused These Failures?

The cause seems very simple and clear. Where formerly the heaviest loads rarely exceeded 3 or 4 tons, at the present time the pavements carry loads up to 12 and 15 tons. While the load is considerably increased, the action upon the pavement is a great many times more severe, because of the rebounding action of the springs, which causes an impact or hammerlike blow. There is a succession of these blows upon hitting a depression or other obstacle in the roadway. The speed of the car also intensifies the blows.

For the sake of showing this more clearly, let us assume two large balls of equal size, one weighing 1 ton and the other weighing 4 tons. The small one will represent the weight upon one wheel of a heavily laden coal wagon, while the other will represent the load on one wheel of a 16-ton truck loaded to its capacity. Imagine these two balls rolling over a smooth surface until we come to a depression. Here the balls drop down into the depression and deliver a hammerlike blow on the bottom. If the depression is slight, the impact will be thrust upon the opposite side with a tendency to enlarge the size of it. In the case of both balls traveling at the same speed, you will readily see that the impact of the

larger is about four times that of the smaller. If the larger ball travels faster than the small one, the difference in impact will be still greater. Now if the ball exerts its pressure on the surface through the action of springs, this impact will set up a series of these blows which are directed along the line of travel.

The Remedy

The surface may be made to resist these impacts if constructed of tougher and harder materials. It is possible to make the surface so hard that it becomes brittle and will not resist the impact, hence the specification of toughness.

If a pavement is too soft to resist the strain, there is a tendency to push the surface either forward or back when brakes are suddenly applied or the turning power is suddenly applied to the wheels. By examining surfaces at certain street intersections it will be found that this has actually occurred.

Bituminous pavements, and especially those using the smaller sizes of mineral aggregates, are ideal for paving purposes, for the reason that they can be made hard and tough or brittle.

Since the cause has now been determined, it is a comparatively simple matter to construct bituminous pavements so as to resist the demands of traffic. Many streets have since been laid in accordance with this theory and are proving entirely successful, whereas if they had been laid in the same manner ten years ago the practice would have been condemned.

For those who are not familiar with the construction and proportions of bituminous pavements, the writer hopes to drive away the fear that may have existed upon seeing the bad effects during the past five years. Where competent supervision of such construction exists, no better type of pavement can be had. The matter is now well under control, and better results can be secured with bituminous pavements than with many other materials.

The entire situation is one that could not have been foreseen. Trucks are being used more and more to-day, and more disastrous results can be looked for on brittle road surfaces.

Where it was formerly desirable to use 65 to 75 penetration as the proper consis-

tency for asphaltic cements, in order to prevent cracking of the surface, penetrations of 50 to 65 are now found successful to combat the heavy truck traffic of to-day.

It is necessary to guard more closely the grading of the mineral aggregate so as to prevent the use of mixtures that will be apt to creep. A mixture containing too large a percentage of dust or fine material will be apt to shove or creep, and too high a percentage of larger aggregate will not have sufficient stability to resist the tendency to push it out of place.

It has also been found necessary to use

a mixture similar to the wearing surface of a sheet asphalt pavement to cover the coarser asphaltic concrete or bitulithic pavements. Without this covering, winter traffic has proved severe on this type of construction, and the mixture breaks up or disintegrates very rapidly. To prevent this unravelling from continuing, it is necessary to cover the surface with another seal coat or mixture, as just described. As long as the coarse aggregate is exposed to the weather and to traffic, it is certain to occur again if the traffic conditions are not greatly decreased.

Sheet Asphalt Pavement Successfully Withstands Unusual Traffic

During the month of February, 1920, 116,000 barrels of Portland cement and during the month of March, 1920, about 180 truck loads of cement per day were hauled between Buffington, Ind., and the city of Chicago. Some of the trucks were loaded with 300 sacks weighing about 16½ tons, this being in addition to the weight of the truck. The Buffington plant from which this material was hauled is two miles from Indiana Harbor. This entire traffic, in addition to very heavy normal traffic, is carried through the city of Whiting on a sheet asphalt pavement constructed during 1918. Inasmuch as this pavement shows no signs of being affected by unusual traffic, the important features of design will be of interest to highway engineers. The base for the sheet asphalt surface is Portland cement concrete 8 inches

in thickness. The binder course was laid 1½ inches in thickness and contained approximately 6 per cent bitumen, 25 per cent sand and 69 per cent broken stone passing a 1-inch screen. The wearing course is 2 inches in thickness and was mixed approximately with 11 per cent bitumen, 13 per cent carbonate of lime passing a 200-mesh sieve, and 76 per cent sand. Petroleum asphalt cement used had a penetration of 52 to 55. The roadway averages 30 feet in width and has a crown of 3 to 4 inches. The theory of the construction of this road was to secure a pavement having sufficient weight per square yard to take up any vibration that would be caused by the heaviest load passing at the usual high rate of speed of a heavy motor truck. Such weight is approximately 1,220 pounds per square yard.



THIS IS THE TYPE OF TRAFFIC THAT THE BUFFINGTON-CHICAGO ROAD CARRIED WITHOUT SHOWING SIGNS OF WEAR

The Fields of the Air-Lift and the Deep-Well Pump

By Jacob L. Crane, Jr.

Ginnett, Seelye & Fleming, Engineers, Harrisburg, Pa.

STRENUOUS competition exists between the air-lift system and the deep-well pump for drawing water from deep wells, although in reality they are seldom actual competitors, for each has its own specific field with little overlapping. These two methods of pumping have developed simultaneously and it is not unusual to see either one in operation where the other legitimately belongs. In some parts of the country one seems to be in the ascendancy, while the other is more common in neighboring territory, but often the selection between them seems to be based on very few sound data. The cost of installation is many times on a par, so there is little advantage here. For each there are at least half a dozen manufacturers and many more sales agents covering the entire field of deep-well pumping as thoroughly as they can, often without concern as to whether they are selling the best article for a particular job. As a matter of fact, the merits and character of each place it at the head of the list for a certain limited field of operation.

The outstanding advantage of the deep-well pump, as compared to the air-lift, is its economy of operation. The overall efficiency of air-lift varies from 10 per cent to 35 per cent, while that of the deep-well pump ranges from 50 to 65 per cent. In other words, it costs to operate a deep-well pump only from one-fifth to one-half of the cost to pump by air-lift. This is a controlling factor in most cases, and for installation where the deep-well pump is truly practicable, and particularly where there are but one or two wells to pump, the deep-well type has the critical advantage and should ordinarily be used. The former disadvantage in the fact that deep-well pumps necessitated more frequent and troublesome repairs has been partly overcome by the advance in design and installation methods, and should not rule out the deep-well pump except in some particular cases.

On the other hand, there is a large group

of more or less special well-pumping problems where the air-lift, in spite of its greater operation cost, has an advantage over the deep-well pump and where it finds its legitimate and exclusive field.

Where there are several wells fairly close together they may be operated by air-lifts all supplied with air from one station, thus necessitating only one main pumping plant and building and one receiving basin, and only air- and water-lines running to and from the individual wells. This usually means a secondary high-lift pumping, but even then the installation, and perhaps the operation cost, may be in favor of air-lift, and the satisfaction in operation may be greater.

When a well is so small that a deep-well working barrel large enough for the desired amount of water cannot be put down, the air-lift comes into its own, for the simple matter of an air-pipe and a water-pipe down a well usually makes it possible to pump out of a well by air-lift any amount the well will supply.

When the water is deep in a crooked well it is impossible to operate a deep-well pump, while air-lift apparatus can be used with entire success. By the recently developed booster or multiple-lift system, water can be raised in large amounts from great depths, where deep-well pumps would be out of the question.

When the water contains iron or other objectionable substance, removable by aeration, the air-lift is advantageous because it aerates the water as it is raised from the well and prepares it for settling, or filtration.

These specific cases, and variations of them, outline the field where air-lift pumping belongs, often to the exclusion of other types. As a general proposition, because of its economy, the deep-well pump is the proper choice for most other deep-well pumping problems, wherever they can be readily used.

Savings Through Water-Waste Control

By H. M. Beardsley

General Manager, Water Board, Elmira, N. Y.

THE majority of water-works men are beyond the stage of argument as to the value of meters. It must be pretty nearly universally conceded now that a water-works plant that is not metered is not what it should be and is placing a burden on the community in which it is located by excessive plant requirements, and a burden on the other industries of the country by burning up coal for pumping wasted water which ought to be saved and used for producing useful power.

Altho the question of the advisability of metering water-supplies to control waste may be considered settled in the affirmative, there is always more or less interest attached to concrete statements of what has been accomplished by metering.

When the city of Elmira, N. Y., bought the water-works plant May 1, 1915, there were in use 4,441 meters on 8,782 services, so that the plant was almost exactly 50 per cent metered. The population supplied at that time was estimated to be 42,000. The pumpage for the month was 135,030,000 gallons. Of this, 30,373,000 gallons went to railroads and large industrial plants, leaving 104,657,000 gallons for the everyday use of the city at large. This was equivalent to 80 gallons per capita per day.

The Savings Effected by Complete Metering

It was immediately determined that the remainder of the city should be metered. As is usual, a number of more or less interesting incidents developed in the course of the efforts to get everybody metered. One of the most striking cases was that of a small sporting goods dealer whose store backed up to the Chemung River. He had a single faucet in his store, for which he was paying the regular flat-rate charge of \$6 per year. When it came to metering this particular place, it was discovered that the man had a small pond in the cellar of his store, running off into the river, that he kept a large supply of live bait in the pond and a stream of water running continually. This man was using approximately \$100 worth of water per year. Needless to say,

he did not continue to use this amount of water after the meter was installed, and his meter bills never equalled the minimum allowance of 500 cubic feet per quarter.

In May, 1919, there were 9,876 services and 10,091 meters in use, when the estimated population served was 50,000. The pumpage for that month was 136,377,000 gallons. The industrial plants used 35,000,000 gallons, leaving 101,377,000 gallons or 65 gallons per capita.

The cost for pumping and filtration at Elmira for the year ending May 1, 1919, was \$19.60 per million gallons, and the total cost for pumping, filtration, distribution and general expense was \$37.90 per million gallons.

The total cost for installing 5,875 meters, from May 1, 1915, to May 1, 1919, was \$50,848.12. It will therefore be noted that a substantial percentage on the investment was made by the reduction in consumption of 15 gallons per capita per day.

Results of Pitometer Survey

This, however, does not tell all the story about the control of wastes in Elmira. After more than a year of negotiations with the Pitometer Company, it was decided to have a leakage survey made, which included a test of the large industrial meters in place. The officials were pretty well satisfied with the domestic consumption of 65 gallons per capita, and did not expect to have anything show up except perhaps some little discrepancies in the large meters. Much to their surprise, several good-sized leaks were discovered in the mains and quite a number of small leaks, also one of the large industrial meters was found to be 20 per cent slow. The losses from the largest two leaks were 100,000 gallons per day each.

Savings Through Survey

As a result of the repairs made after the survey, the pumpage for November, 1919, was only 120,329,000 gallons, or 16,000,000 gallons less than it was for May, and after deducting the 43,610,000 gallons used industrially, the per capita consumption was only 51 gallons per day.

As stated above, the cost of completing the metering of the city was \$50,848.12. Assuming that the 4,441 meters already installed when the city purchased the plant were put in at the same rate, we have a total cost of \$89,301.92 for the entire metering of the city. The saving in consumption of water as between May, 1915, at 80 gallons per capita and the consumption of November, 1919, at 51 gallons per capita at the pumping cost of \$19.60 per million gallons, is \$10,231 per year, or practically 11 per cent of the cost of metering and the cost of the Pitometer survey. This does not take into account the value of any saving brought about by the installation of the 4,400 meters put in before the city acquired the plant. This saving should rightfully be considered, and would bring the saving in cost of operation up to at least \$20,000 per year, or enough to pay for the entire meter installation in four and a half years.

Besides saving in cost of operation, there is also a well-known saving in cost of plant. In many places the installation of meters has reduced the consumption of water so much that pumps which had reached their capacity, and would have had to be replaced, could be kept going and the

life of the installation consequently prolonged. Furthermore, it seems reasonable to think that a pump which is good for twenty years, pumping 5,000,000 gallons a day, should be good for twenty-four years if it has to pump only 4,000,000 gallons per day. Furthermore, it is felt in Elmira that there is increased safety in the fact that the 7½-million-gallon pumps now have to run only 12.8 hours per day to produce the 4,000,000 gallons now used, whereas they formerly had to operate 16 hours per day to produce 5,000,000 gallons in 24 hours. This gives an additional shutdown every day of 3.2 hours, giving that much more time to make repairs on the pump and keep it in prime operating condition. The department also contributes something to the common good by the reduction in pumping hours. The plant is operated chiefly by electric power purchased from a power company, and on a 12½-hour pumping schedule it can be operated from 9 P. M. to 6 A. M., and then a few hours after 9 A. M., and thus aid the power company considerably by keeping off the peak load and giving a load to fill up the valleys and improve the load factor.

ACKNOWLEDGMENT.—From a paper read at a meeting of the New York Section of the American Water Works Association.

List of Municipally Owned Asphalt Plants in the United States and Canada

Atlanta, Ga.	Fort Wayne, Ind.	Nashville, Tenn.	San Francisco, Calif.
Bayonne, N. J.	Fort Worth, Texas.	Newark, N. J.	Schenectady, N. Y.
Bluffton, Ind.	Hamilton, Ont.	New Bedford, Mass.	Scranton, Pa.
Boise, Idaho.	Harrisburg, Pa.	New Orleans, La.	Seattle, Wash.
Buenos Aires, Argentina.	Honolulu, Hawaiian Islands.	New York City, Bronx.	Sherbrooke, Quebec.
		New York City, Brooklyn.	Shreveport, La.
Camden, N. J.	Indianapolis, Ind.	New York City, Manhattan.	Spokane, Wash.
Charlottetown, P. E. I.		New York City, Queens.	Springfield, Mass.
Chatham, Ont.	Kansas City, Mo.	Niagara Falls, N. Y.	Superior, Wis.
Chicago, Ill.	Kingston, Ont.	Norfolk, Va.	Syracuse, N. Y.
Chicago, Ill., Lincoln Park.		Northampton, Mass.	
Cincinnati, Ohio.	Lansing, Mich.	Oklahoma City, Okla.	Toledo, Ohio.
Cleveland, Ohio.	Lima, Peru.	Omaha, Neb.	Topeka, Kan.
Columbus, Ohio.	Lincoln Park Comm., Chicago.	Ottawa, Ont.	Toronto, Ont.
Dayton, Ohio.	Little Rock, Ark.		Trenton, N. J.
Denver, Colo.	London, Ont.	Pawtucket, R. I.	
Detroit, Mich.	Los Angeles, Cal.	Pittsburgh, Pa.	Victoria, British Columbia.
Duluth, Minn.		Portland, Ore.	
	Manchester, N. H.	Portsmouth, Va.	
Elmira, N. Y.	Memphis, Tenn.		Washington, D. C.
Erie, Pa.	Milwaukee, Wis.	Reading, Pa.	Wilmington, Del.
Fall River, Mass.	Montreal, Quebec (4 plants).	St. Louis, Mo.	Winnipeg, Man.
Fayette County, Ky.	Munro City, Ky.	St. Paul, Minn.	Worcester, Mass.
Flint, Mich.	Munroe County, Mich.	Saginaw, Mich.	Youngstown, Ohio.

The United States Government also has 12 asphalt plants scattered throughout the country.

The All-Year School

"The Greatest Americanization Agency Yet Established"

By David B. Corson

Superintendent of Schools, Newark, N. J.

IN 1885 the Board of Education of Newark established summer schools, the first in the United States. The purpose was to keep the children off the streets and to furnish them interesting and profitable occupation. These schools have developed into one-session "coaching" or "promotion" schools wherein pupils may strengthen their work and take advanced work to gain grades. A second step of equal importance was taken in 1912 when the experiment of having two all-year schools, one located in the Hebrew section of the city and the other in the Italian section, was authorized. At the end of June, 1918, the number had been increased to seven, two of which were special schools. Three more, including a junior high school, were organized on the all-year plan in September, 1919.

All-Year Schools in Newark, N. J.

The eight grammar schools now operated as all-year schools are divided into two distinct types—three of the regular all-year type, and five (including the junior high school) of the all-year alternating type.

The oldest of the all-year schools is of the regular type. It is located in the heart of a congested section of the city. The school has a day of five and a quarter hours. Manual training is taught one double period a week, sewing one, and cooking one, drawing an hour a week, and music ten or twelve minutes a day. For lack of time, science is given scant attention. To the casual observer this school appears to be a good school of the usual kind. It differs

in that it does forty-eight weeks of work every year, graduates four classes, and is reorganized four times.

The second type is the all-year-alternating school, the oldest of which was organized on this plan a little more than four years ago. In this type of school the day begins at 8:30 and closes at 3:40, with an average period of about an hour for luncheon. The day for pupils is therefore about six hours. This type of school is divided into an "X" and a "Y" school to provide for the alternation in the use of rooms and equipment.

There is complete agreement among teachers in all-year schools that when school opens in the fall there is very much less time consumed in the all-year schools in getting to work, because of the fact that the pupils have not had a long vacation. The pupils who have attended in the summer term have had only a short interruption in the habit-forming work of the school. Habits of cleanliness, punctuality, industry, restraint, etc., are not broken in two weeks as they usually are in two months. The process of forming these habits has been continuous, and there is less or even no waste. The difference in the same school between the pupils who attend in the summer time and those who stay at home is noticeable when the children return in September.

The all-year-alternating schools have manual training and printing shops, sewing, cooking, drawing, music and science rooms, gymnasiums and playrooms,—two or more in a building,—auditoriums, gardens, and one a cobbling shop. Science is a special activity and is very successfully taught. In these schools all the manual subjects have a double period a day in cycles of

twelve weeks each. The educational opportunity is thus immensely increased and a greater degree of skill is acquired by the pupils in all the manual arts taught. The auditoriums in alternating schools are in almost constant use for singing, for dramatization, for illustrated lectures, for phonographic concerts, for moving picture exhibitions. One possibility of these schools is of unusual value: the produce raised in the garden of one school, eleven city lots 25 by 100 feet each, has been canned by the girls in the domestic science room, and the food used in the ungraded schools where food is provided for pupils. Schools of this

type add to the advantages of the regular all-year plan great flexibility in the school organization and enrichment of the curriculum by play, auditorium features, and the special activities of laboratory, shop and studio, providing the children with instruction in manual and other arts that is really worth while.

The curriculum of each grade in these schools is divided into three sections of twelve weeks each, instead of two sections of twenty weeks each, as in the regular schools. The work done, however, in nine months is not exactly equivalent to that done in the regular school in ten months. The curriculum has been somewhat simplified by the elimination of material not really essential. The terms begin September 1, December 1, March 1, and June 1. There are forty-eight weeks of work, with a week's vacation at Christmas, one at Easter, and two at the end of August.

The establishment of an all-year high school was effected on December 1, 1919. The Central High School was selected because it had an enrollment of 2,025 pupils. The number of pupils indicated that the school could afford the acceleration which the plan provided.

The plan embodies these features:

(a) The work formerly done in 38 or 40 weeks in any subject of study is now done in 36 weeks. The less important topics are eliminated from the subject matter, and less time is taken for tests and examinations.

(b) There are four 12-week terms a year and 4 weeks of vacation.

(c) Instead of dividing the course of study into two parts—B and A—there are three parts—C, B, and A.

Trial only can determine whether pupils who do not desire to attend the summer term will drop out June 1. In the elementary all-year schools those who do not wish to attend stay until the end of June and then drop out, making the consolidation of classes necessary. Many pupils are anxious to gain time, and it is believed that 70 to 80 per cent of the high school enrollment will attend throughout the summer. If a pupil drops out at the end of June, all the work of June must be repeated in September. It may be that this natural penalty will cause pupils to remain through July and August in large numbers.

The all-year plan provides a way whereby ambitious pupils may save time in getting an education. By continuous attendance for three years a pupil may finish a four-year course. The speed of the work ought not to be greater than the pupil's ability to assimilate knowledge or more rapid than his mental development. If anyone finds the rate too rapid, the plan is flexible enough to permit him to omit some terms and still gain time. The school continues, although the individual may not attend every term consecutively. The opportunity is his, if all personal conditions are favorable.

The real purposes in the establishment of all-year schools are educational rather than economic.

The Effect on Energy

The first objective is to reduce the waste in energy incidental to the long break of the school year in July and August. It is well known to all teachers that much time is used—two or three weeks—in January, and again in June, in preparation for the final term examination, which consumes an additional week of each of these months. It is evident that the short term removes the necessity for using so much time for a grand final review and drill. The theory is that frequent and reasonable reviews and drills should be substituted for the very formal one hitherto used, and that the educational process should be continuous.

There is complete agreement among teachers in all-year schools that when school opens in the fall there is very much less time consumed in the all-year schools in getting to work, because of the fact that the pupils have not had a long vacation. The pupils who have attended in the summer term have had only a short interruption in the habit-forming work of the school. Habits of cleanliness, punctuality, industry, restraint, etc., are not broken in two weeks as they usually are in two months. The difference in the same school between the pupils who attend in the summer time and those who stay at home is noticeable when the children return in September.

The Effect on Health

The second objective of the all-year schools is to prove that school work in summer is not injurious to health. The health of children and teachers in these schools

has been uniformly good. The Department of Medical Inspection is vigilant and the school nurses are watchful and thoroughly efficient. The physicians in charge of these schools report that in their opinion "the general health of the pupils has been better than if the children had not attended school." The percentage of attendance on the enrollment in the schools is generally higher in the summer than in other schools during the year.

Inquiry in the home reveals the fact that parents believe the children are better off in the large, cool, pleasant classrooms than in the streets or even at home. Pupils about whose physical fitness there is any doubt are not admitted. In several summers there have been very few pupils whom teachers thought might better have stayed at home.

To answer the question as to the effect on teachers: Referring to the oldest school as typical, there were fifty teachers in the school when the plan was adopted. Seven have been transferred to other schools, five have been promoted to higher positions in other schools, two have gone to other cities, sixteen have married, and twenty are still in the school. Of these, fifteen have taught from three to eight successive summers out of the eight since the school was made an all-year school. Of the sixteen teachers who resigned to be married, twelve taught from three to six successive summers without injury to their health.

Attendance of pupils and service of teachers in the summer are voluntary. If teachers in a school do not care to teach there are always a number of experienced teachers of given grades from other schools who gladly accept the positions. The testimony of the teachers almost without exception is that there are no detrimental effects upon their health. They say that it has not been impaired by extra work. Some

say they return to school in September somewhat lacking in the buoyancy and freshness characteristic of those who have had two or three months' vacation. Others say they prefer to teach in the summer not only because of the extra salary but because the long vacation is tiresome and they have no regular work to do. Therefore, it seems to be demonstrated that the health of the pupils and teachers is not injured by the summer work.

The Gain in Time

The third reason for the establishment of the schools is to save time. On the average, schools are in session less than half a year, about 190 days, because of the many holidays and the vacations. The average school in the United States is open 70

days less a year than the European schools. The summer vacation is a survival of the time when the business of the country was largely agricultural. The children were needed to help on the farms. The conditions in the cities do not justify such a plan now. Because of the time element vast numbers are prevented from obtaining an elementary education.

The all-year plan provides a way by which ambitious pupils may save time in getting an education. By continuous attendance for three years a pupil may finish a four-year course. The speed of the work ought not to be greater than the pupil's ability to assimilate knowledge or more rapid than his mental development. If anyone finds the rate too rapid, the plan is flexible enough to permit him to omit some terms and still gain time. The school continues, although the individual may not attend every term consecutively. The opportunity is his, if all personal conditions are favorable.

Under the all-year plan the work of the eight grades is done in six years instead of eight. A pupil attending four twelve-week terms in any calendar year gains one-third of a grade over a pupil under the regular plan. Pupils who entered the regular grade in September, 1912, will enter the high schools in September, 1920, but under the all-year plan those who entered in September, 1912, entered the high schools in September, 1918, two full years earlier.

That these schools are taking more pupils through school—the results of gaining time—is evident from the following facts: one school, during the six years preceding the inauguration of the all-year plan, graduated 268 pupils; during the six years

following, it graduated 836 pupils. In this time it graduated twenty-four classes, twelve more than it would have graduated under the old plan. The number of pupils in these twelve extra classes was 417. If the old plan were in use, these pupils would still be in school, and there would be, at a conservative estimate, ten half-day classes in the building. Many of the pupils would not have been able to stay at school to graduate under the old plan.

An Actual Money-Saving

The superficial critic will assert that there has been an increase in expense in maintaining the all-year schools, for teachers are paid two months' additional salary for July and August. Those who have had one year of successful experience in an *all-year-alternating* school receive in addition a bonus of five per cent on their salaries. In the all-year-alternating schools there are more teachers of the special activities who are on a higher salary schedule. The cost of the equipment and operation of the building is greater. Consideration shows that the increase in salary is justified because of the increase in the length of the day and in the length of the year, and because the work is more onerous and requires greater ability on the part of the teacher both as a disciplinarian and instructor. To offset this increased cost in salary, number of teachers, and equipment, the pupils are accelerated in their progress through the schools and others take their places; thus a larger number of pupils are accommodated in a given time.

A study of the promotion records of the five schools shows the actual saving effected. To make it clear it must be remembered that the all-year plan covers in three twelve-week terms the work of a year as outlined in the curriculum, so that in three years a full year would be saved. To illustrate the principle, the summer, or August, promotions for three years in one school were 1,093, 966, 1,046. *Dividing the total for the three summers by three, the average number of pupils who gained a year is found to be 1,035. The per capita cost in this school for the middle of the three years was \$33.60. Multiplying it by 1,035, the cost of instruction was \$34,776. The cost of maintaining these three sum-*

mer terms was approximately \$24,000. The saving was then approximately \$10,776.

Another means of saving is in the reduced building expenses. Newark's educational problems are similar to those of other great American cities, among them the problem of providing school accommodations to meet rapidly increasing demands. For the first time in many years, in the fall of 1917, because of the introduction of all-year and alternating schools, there were no children on part time in the schools. The cessation of building operations, due to war conditions, changed that satisfactory state of affairs temporarily. The district of the oldest all-year school has been enlarged three times in order to provide pupils for the same number of teachers. It is clearly seen that by changing this school to an alternating all-year type and putting one of six other schools within a radius of seven blocks on the same plan, one of the five remaining buildings in the circle can be released to be used as a junior high school, or for some type of school that shall serve the whole city.

The all-year-alternating schools have more classes than they were constructed to accommodate. One school has seven; another, eight; another, eleven; another, seventeen; and a fifth, five. To accommodate these classes additional buildings would need to be erected. The cost of these forty-eight classrooms, at \$12,000 per room, would be \$576,000. The saving may be further illustrated by supposing that there are two schools, one on the old plan and one on the new, each enrolling 2,000 pupils. To educate the children in eight years on a forty-week basis at 90 cents per week (\$36 per capita per year) will be \$576,000; for six years, of forty-eight weeks each, \$518,400. *This shows a saving of \$57,600.*

In New Jersey the state makes its apportionment of school moneys upon the basis of the number of days' attendance. The extra attendance in July and August, therefore, adds greatly to the amount of money received from the state. Although these schools were not established primarily for purposes of economy, it is clear that this is one of their characteristics.

The Change Should Not Be Abrupt

Notwithstanding the success of these schools, it is inadvisable to introduce them any faster than supporting public opinion

can be secured. They require the adjustment of the habits of the community. They require changes in curricula—both elementary and secondary. They require a different attitude on the part of teachers—elementary and secondary. When introduced, the best plan is to change one or two schools at a time. The best schools for the purpose are those in congested neighborhoods where the children remain in the city during the summer time. It is well to make concessions to the established order of things as far as possible. Instead of a plan requiring terms of twelve weeks with a week of vacation between, better a plan giving two weeks in late summer, a week at Christmas, and a week in the spring. This has worked fairly well and is a less violent way of treating the community.

In selecting schools for the experiment it is well to remember that the two-language school presents the greatest difficulties. All must acknowledge the handicap of the use of a foreign language at home and of a different language in school. The

acceleration of the all-year plan makes it difficult for the two-language pupil. The acceleration also brings into the upper classes of these schools younger pupils who have not the general information of native Americans of the same age. There will be in these upper classes older pupils who, in ordinary schools, would be the retarded pupils in lower classes. These facts constitute reasons for having able teachers for the work if such a school is selected and not for depriving the children of the opportunity to gain the advantages of the all-year plan. It is the greatest Americanization agency yet established.

These schools make for the happiness of the children and the comfort of the parents. To many of the children, school is the most enjoyable experience in life. Many even object to one session on stormy days. To many of the parents, school gives relief from much trouble and worry. At home the children are in the way; on the street they are in danger, physical and moral; in school they are safe.

Vital Statistics and the Physician

By Rufus C. Pennywith, M. D.

Registrar of Vital Statistics, Dayton, Ohio

IF a physician wishes to have his day's work complete and to contribute his part to scientific achievement, he must make prompt and accurate reports of births and deaths, thereby helping to compile accurate statistics. Statistics are many times misleading and inaccurate, but birth and death statistics can be absolutely accurate if physicians will make a full and complete report. A prompt and complete return of birth and death certificates is mandatory by law, and punishment is provided for in case of failure to perform either.

Physicians often complain of the burden imposed upon them of reporting births without being compensated for the work; but if they would only think of the service they render to the individual, the city, the state and the nation in the matter of statistics alone, they would see it in a different light.

For many reasons it is of vital importance to the individual that a record establishes nationality, school age, working age, aids soldiers' widows in securing pensions, establishes relationship in the matter of settling estates and is necessary in securing a passport to travel in foreign countries. Without accurate vital statistics, a city, a state or a nation cannot check its gains by births or its losses by death. A nation's wealth is not in its lands, waters, flocks, minerals or forests, but in its people; they alone determine its present and future standing among the nations of the earth. Accurate vital statistics aid in infant welfare work and assist those whom we place in charge of the health of a community to perform their work more wisely and well. Don't fail to report births promptly and sign death certificates accurately.

Forward Steps

Reported to THE AMERICAN CITY

by Municipal Officials & Department Heads

City Managers

Life Insurance for All the Employees of a City

ALBUQUERQUE, N. MEX.—The city of Albuquerque has undertaken an innovation in the way of municipal management in the form of life insurance for all employees of the city, from the City Judge to the garbage collectors. The program includes all employees of the Board of Education and the teachers in the city schools.

The City Manager entered into the contract for the city, and M. E. Hickey acted for the Board of Education, as President. The insurance is given without cost of any kind to the employees, and its benefits are in addition to employees' compensation. About 125 persons will be benefited by this unique program. The plan extends to all employees immediately on entering the service; they receive \$500 of insurance during the first six months, and \$1,000 during the second six months of employment. At the end of each additional year of service an additional insurance of \$100 is presented. Among the city employees this year-to-year increase in the amount of the insurance continues until a maximum of \$1,800 is reached. For the Board of Education there is a maximum of \$2,000. In both instances the plan is made retroactive as to length of service.

Among the employees on the city pay-roll are eleven mechanics, three laborers, and eleven clerks. There are eight policemen, seventeen firemen, the City Judge, the City Doctor, the City Chemist and the City Attorney. The blanket policy requires no medical examination and is issued without regard to the ages of the employees. The action of the Albuquerque authorities is the

first instance of the extension of such a program to all the employees of a municipality, but it is estimated that there are today one million industrial workers protected by this form of insurance.

JAMES N. GLADDING,
City Manager.

Recreation Departments

Intensified Use of Recreation Grounds and Buildings

INDIANAPOLIS, IND.—Prior to 1919 no definite recreation plans had been developed for Indianapolis as a whole, and there had been a lack of perspective in regard to the future activities of the Recreation Department. That condition was carefully considered during the survey which was made of the entire city in order to determine its recreational needs. Previous to this time the Recreation Department had been identified with the Board of Health and Charities, but the Legislature had passed an act providing for the uniting of the Recreation Department with the Park Board. As a result of this act the Department has been authorized to condemn such ground as is available for recreational centers and to provide for properly equipping it. Bond issues for such purposes have been greatly fostered by this act of the Legislature. The demand for recreational centers in Indianapolis has increased, and more disposition to establish them has been shown among officials. Citizens from all sections of the city are showing eagerness for them. The public need for recreation centers in Indiana is almost as well recognized as that of the schools.

The Recreation Department has adopted the slogan "Intensify the use of the grounds



THESE BOYS FROM ONE OF THE INDIANAPOLIS PLAYGROUNDS HAVE MADE THE BIRD HOUSES WHICH THEY ARE DISPLAYING

and buildings." In carrying out our slogan we realize that the secret of success lies in leadership, and an earnest endeavor has been made to secure the best leaders and assistants, in order to make our playgrounds and recreation centers the vital force they should be. Realizing that there must be a continued process of education for our workers, it is hoped that in the near future we shall be able to establish a school for recreation work in connection with the department. In the meantime our recreation workers are taking an excellent course given by the Indiana University Extension and the Y. W. C. A. The North American Gymnastic Union is also a very helpful source from which to get trained workers.

We have been led to realize that the playground and recreation centers are one of the most democratic influences in the life of a nation, because the people, both rich and poor, meet each other on grounds where all are equal. We have considered this phase of the playgrounds and have attempted in many cases to organize the grounds on the self-government plan. Under this plan all are made responsible not only for personal behavior, but also for

the general conduct of the crowd and the appearance of the ground. The very fact that the people are trusted with this responsibility has made them desirous of everything that would mean progress and better opportunity for all. In this way the children have learned to appreciate each other and to understand that democracy is sustained by justice for all, sound co-operation and good-spirited team-work.

An earnest attempt has been made by the members of the department to encourage natural and unrestricted play where the children shall become good comrades and abandon all artificialities. As a result of this type of play, qualities of self-forgetfulness and thoughtfulness of others have developed.

The playground season was opened on June 6 in 1919, two weeks earlier than in the past, and closed September 6. The parks were open until October 15 after school hours.

In arranging an evening program for adults, it is essential to know what the people want and to provide the activities through which they may find expression in a way that will give them the most enjoyment. The result of such community ac-

tivities as pageants, community sings, community dramas, neighborhood parties and various other celebrations has been to draw the people together as members of the community and not as boys and girls and adults. "Motion pictures take *everywhere* to the people and destroy the otherwise galling limitations of time, space and circumstance." Singing together has tended to weld thousands of individual minds into one community spirit. That welding has been the task of our department—to create the community mind. So great was the demand for music during the winter months that The Messiah and other high-grade compositions were given to capacity houses. Distinguished artists have come to Indianapolis to take part in our community programs. Through the coöperation of the Board of Education and the Park Board, these concerts have been given free to the public.

According to the judgment of many citizens, the Recreation Department during the year of 1919 enjoyed its most successful season. Reports from Judge Collins of the Criminal Court, and Judge Lahr of the Juvenile Court indicated that our work is helping to reduce the number of delinquency cases in their courts. "Give a boy a chance

at football, baseball or basketball; give him an opportunity to perform difficult and dangerous feats on a horizontal-bar, on the flying-ring, or from a diving board, and the policeman will need a gymnasium himself, to keep his weight down." This is not theory; it is the testimony you will get from any policeman or teacher who has been in the neighborhood before and after a recreational center has been started.

R. WALTER JARVIS,
Director of Recreation.

Health Departments

Dental Clinics in Schools

NEW YORK, N. Y.—Dental clinics for school children in New York have been maintained for a number of years by the Bureau of Child Hygiene of the Department of Health. There are eleven of these clinics, located in the various boros of the city, nearly all in public schools. This work is of interest to all who are concerned with the physical welfare of city populations.



DENTAL TREATMENT OF NEW YORK CITY SCHOOL CHILDREN

During 1918, the dental staff comprised one supervising dentist, nine operating dentists, eight nurses, and three dental hygienists—young women especially trained, and competent to instruct in dental hygiene and to do actual prophylactic work in the mouths of children as demonstrations of the principles taught. War economy necessitated the dropping of these three hygienists, but it is hoped that because of the good results which they accomplished, an increased number of equally skilled instructors will soon be provided to continue the work.

The limited staff is unable to reach all school children needing dental treatment, and it has therefore been the plan to select children from the age of school entrance up to 10 or 12 years. During this period a child's mouth is in a transitional stage, and work done at that time will have a good effect upon the adult development and condition of the mouth. The work is necessarily limited to pupils of the schools in which the clinics are located, and the younger children receive first attention.

On certain days the clinics do work for other children who have applied for employment certificates and cannot pass the required physical examination on account of the condition of their teeth. Another important factor in the work is the dental treatment of children predisposed to tuberculosis who are being sent away to preventoria.

The work done by the dentists consists of filling, extraction and operative treatment, with lectures and other instruction. Nurses are in charge of each clinic and are responsible for the maintenance, care and preservation of records, instruments and other equipment, and for the discipline of the clientele. In spare time they also lecture and do instruction work.

The dental hygienists carry their instructions to even greater numbers of children and parents than are reached by either dentists or nurses, and at the same time do routine inspections of children's mouths, calling attention to gross defects found, and directing the child to see the family dentist. In such cases it has been possible to get the coöperation of the family to a surprising extent. A small card is used, stating that the child's mouth needs attention, and requesting that the card be re-

turned signed by the dentist who does the work. The children take these cards home, and in many cases return with the work completed and the cards duly signed.

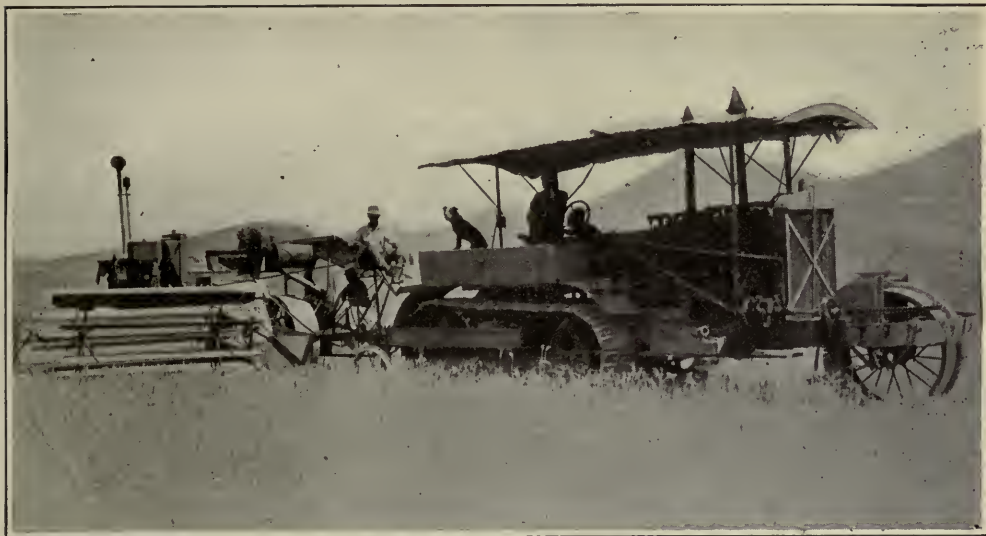
The idea on which all this dental work is based is to impress the children with the knowledge of what a clean, healthy mouth is, and the aid it is towards a healthy body. The children are taught how to keep their mouths in good condition, and it is endeavored to make them understand what good dentistry is, so that they will not fall into the hands of charlatans. At the end of certain periods, varying from six months to a year, all children who have been treated are required to return for examination, in order to ascertain the result of previous instruction and the condition of the work done. It has been found that over 80 per cent of these children need very little new attention.

All the nurses connected with the schools have been thoroly instructed in ideas and methods related to the teaching of dental hygiene to children. It has been found advisable to adopt for the children the rotary motion of the brush in cleaning the teeth, as from all standpoints this method seems most applicable and teachable. It is the one taught in the large majority of educational institutions. Lectures and talks are given not only to the children themselves but to any group or organization connected with the school.

In schools where this dental work has been done, and particularly where dental educational propaganda has been conducted, the teachers and principals say that they have noticed the effect upon the children, especially in what may be termed the improved tone of the pupils' personal hygiene. As further evidence of the practical side of the work and of its appreciation by all, the Health Department is in constant receipt of requests to extend the work. The principles involved in this important undertaking are applicable to many cities.

R. L. COPELAND,
Commissioner of Health.

"Do everything you can to improve the schools, not so much by way of criticism of what is bad as by praising what is good. Take the school that is best in your community and talk that up. Make other schools see their deficiencies by comparison with the good school."—Dr. J. E. Gregg, *Principal of Hampton Institute.*



BEGINNING THE 1,200-BUSHEL HARVEST OF WHEAT ON ENSIGN FLAT, NEAR THE STATE CAPITOL, SALT LAKE CITY

Park Departments

A City That Has Come Back to the Farm

SALT LAKE CITY, UTAH.—Nearly everybody at home learned something of truck or back-yard farming during the war, but it was not the war which forced the municipality of Salt Lake City, through its department of parks, into the ordinary business of farming. It was largely the necessity for bringing up a few orphaned farms, along with the acquiring of some mountain and canyon watershed lands, that brought about this undertaking.

With the farms came a considerable amount of machinery, and the necessity for utilizing it economically. Some needful machinery that was lacking was purchased. The machinery and implement outlay was out of proportion to the amount of land that had been acquired, hence several hundred acres of virgin and park land within the corporate city limits were brought under the management of the city's farmers, to make the whole proposition more profitable.

Much of the farming done on small segregated tracts of city-owned land two years ago was for the purpose of stimulat-

ing interest in war gardens. This has been continued because of its profitableness, and because of the need for producing a variety of crops to be used as feed at the city Zoo in Liberty Park. The vast quantities of alfalfa hay, bedding straw, oats, wheat, rye, corn and vegetables which are necessary have been produced almost exclusively on the city's farms—even the carrots for the bunnies and the popcorn for the monkeys in winter. The city seems securely established as a farmer.

In utilizing the available ground to the best advantage, and at the same time not overworking the machinery or the men, it has been desirable to grow much larger quantities of certain crops than were necessary for city consumption, such as wheat and potatoes; but in the last two years the income from the sale of these has more than paid for all the machinery purchased, including a potato digger, a large caterpillar tractor, a combined grain harvester and thresher, a hay press, and numerous smaller harvesters and implements. Indeed, the yield of 1,200 bushels of dry land grain grown each year on 70 acres in the Ensign Flat field, just above the State Capitol, and within direct view of the entire city of Salt Lake—a field that had never before grown a crop—was sold for \$2,600 cash, which more than paid for all the implements used in growing and harvesting the crop.

The tractor has been transferred to the city and used regularly on the streets and in the parks for grading and heavy hauling, when not needed on the farms; some of the plows and levelers have also been used for street and park grading; the teams have been used as occasion required in delivering feed to the menagerie, and for other duties; and in other ways the farming department of the city has coöperated with the park department, as none of the farms are more than a few miles from the city.

The Mountain Dell farm, the so-called Resort Farm, and the Pest House farm, each consisting of several large fields, with ample fences, pastures, buildings, implement equipment, and livestock, are situated at scattered places in Parley's Canyon, one of the city's watershed areas, and these farms will in all probability be maintained permanently for general farming. All have more or less irrigation water and excellent soil, and as long as conditions thereon are properly controlled no harm can result to the watersheds nor to the city water-supply.

A large acreage of corn, potato and general truck lands which has yielded exceedingly well on the city's west side, in a fine alluvial soil along the Jordan River, is still maintained like a series of war gardens. These more distant park areas are not at present kept up as parks or resorts in their

entirety, but are set apart for future use as such. As there is great need for diversity in the bill of fare at the Zoo, such as these lands produce, these areas will be very largely farmed henceforth, under the present plans of the city officials.

The Ensign Flat dry farm, overlooking the city from the north, was a daring venture, entered into at the suggestion of a number of experienced dry farmers who felt not only that the idle land would produce grain without water, but that it should be utilized as a small weapon against the high cost of city governing and of living in general. The slope is southerly, the subsoil a gravel, and the season was not the most favorable for conserving moisture, yet the tract was handled so efficiently, from its initial clearing to the final harvest last year, that an excellent record has been made. The assured wheat prices increased the profits over what can probably be expected in the forthcoming season; moreover, following the most approved dry-land practise, it seems wisest to fallow the land for one season for moisture accumulation before planting another crop; hence the brilliant stubble patch, like a scar in the world of sage and other browns, will remain undisturbed in 1920.

A. H. CRABBE,
Commissioner of Parks and Public Property.



THE MUNICIPAL "REST ROOM" IN PHOENIX, ARIZ.



WOMEN'S LOUNGING ROOM IN THE BUILDING SHOWN ON THE OPPOSITE PAGE

City Engineers

Not Like the Ordinary Municipal Rest Room

PHOENIX, ARIZ.—Until recently when the vast irrigation projects and the appropriation of millions of dollars for various improvements brought in thousands of homeseekers, Phoenix had been noted throughout the country as an ideal place for a winter home and as a tourists' city. Among the comforts provided by the citizens especially for passing tourists and visitors is a municipal rest room. It is like a patent medicine in that it serves many purposes, and unlike the same because it gives absolute satisfaction. Although combined with a band-stand, which also serves as a public speaking platform, it is essentially a women's rest room.

The architecture is of no one particular style. The building was designed to serve

so many purposes that it looks like a cross between a bungalow and a Japanese cottage. Nevertheless, the appearance is pleasing. The exterior is finished in pebble dash, sand finish and cement plaster. It is one-story with a three-quarter basement.

On the first floor are a waiting-room, a check-room, a lounging-room, which is also the library, a nursery and a men's toilet. The rooms have beamed ceilings, maple floors and plaster walls.

The entire basement is for women. It has a rest room, a toilet, a nursery and a kitchenette. The floor is of concrete.

The women's rest room on the first floor is the lounging room. It resembles the ordinary municipal rest room about as much as a living-room in a home resembles a cell in a municipal jail. It is nicely and comfortably furnished with easy wicker chairs and couches. The center table is always loaded with newspapers, magazines and flowers. A bookcase in one corner, which is a branch library of the city library, has a capacity of 1,000 books and is always full.

The walls are tastefully decorated with oil paintings, contributed by the women of Phoenix. The carpets on the floors harmonize with the furniture in color. And each room has a fireplace.

Not only do motorists drop in for an hour or two to refresh themselves, but the women of Phoenix come in to rest after shopping. The wives of farmers find it an ideal place to spend part of the afternoon. They may leave their babies in the nursery and then go out to do their buying.

The kitchenette in the basement is equipped with gas stove, cupboard, sink and refrigerator. This is one of the most popular features of the building. In a few minutes those who wish can prepare a cup of tea or chocolate for a light lunch. Many girls whose homes are far out, keep provisions in the storeroom and prepare daily lunches in the kitchenettes.

The rest room is located in the city hall plaza. In the evening, occasionally, the band entertains the citizens and visitors, who may sit about on benches or on the lawn under spreading umbrella trees. The band-stand takes up the length of the building on one side and is constructed like an alcove. It is 15 feet high and 12 feet deep at the center point. A circular platform of concrete projects 8 feet.

Very few cities of 40,000 population have such a municipal feature, even though it cost only \$4,300. It is something which every city needs. Whether it is merely a place of four walls wherein to kill time, or a corner like one's home, depends upon the person in charge and also upon the funds available.



MOVABLE LUNCH ROOM USED BY THE NEW YORK POLICE DEPARTMENT

The Phoenix municipal rest room is in the care of Mrs. Ida R. Abbot, who is matron, librarian, nursery maid, check girl, hostess, and possibly confidante.

A. S. GREGORY,
Office of City Engineer.

Police Departments

A Lunch Wagon for Policemen

NEW YORK, N. Y.—A lunch wagon is a part of the equipment of the New York Police Department. This "wagon," which is a motor truck with a covered express-wagon body, was presented to the Department by the writer, for use in furnishing hot coffee and sandwiches to members of the force on duty in exposed places in inclement weather during the winter months, and cooling refreshments in the summer time. It can also be used for the transportation of members of the force from one point to another in emergencies.

JOHN A. HARRISS,
Special Deputy Police Commissioner.

Libraries

A Library Service for Hospitals

SIoux CITY, IOWA.—The Sioux City Public Library in establishing its Hospital Service has undertaken an entirely new line of work from the public library standpoint. The idea is a development of the service of the A. L. A. Hospital Librarian in the military hospitals, and was inaugurated in Sioux City in December, 1919, by the writer. The hospital authorities are enthusiastic about it, and prominent physicians of the city have given it their hearty support.

A hospital librarian was appointed and the people of the city were asked to contribute books.



DISTRIBUTION OF PUBLIC LIBRARY BOOKS IN THE SURGICAL WARD OF A SIOUX CITY HOSPITAL

Wide publicity was given to types of books wanted and even to lists of specific titles suitable for hospital use. Over 5,000 volumes were secured. A collection was then placed in each of the six hospitals of the city, ranging from 300 to 500 volumes and supplemented from the main library by special requests. The Hospital Librarian visits each hospital twice a week and finds out from the patients what kind of reading matter is desired, whether it be a book of light fiction, a magazine, or a technical book. Reading aloud is encouraged. Six specially designed book-trucks have been placed in the service. These are wheeled to the patients' bedsides and thus facilitate book selection.

After conferring with physicians and hospital authorities, as a matter of precaution and to safeguard against the possible

spread of disease, the following plan has been adopted and rigidly adhered to:

1. Each hospital has its own permanent collection, and books are not transferred from one hospital collection to another.

2. The books in each hospital collection are fumigated at regular intervals.

3. Under no circumstances are books circulated to patients having contagious or infectious diseases. The Hospital Librarian makes it a point, on entering the hospital, to first secure a list of such patients as may be confined with contagious or infectious diseases. The number of each patient's room is taken, and these rooms are carefully avoided.

4. Any books borrowed from the main library for special requests are thoroughly fumigated before being placed in circulation again.

C. W. SUMNER,
Librarian, Sioux City Public Library.

Editorial Error in April Issue

Our attention has been called by Alex Henderson, Chief of the Fire Department of Kansas City, Missouri, to the fact that a photograph of motor fire apparatus which appeared in the April issue of *THE AMERICAN CITY* bore a caption stating that the fire apparatus belonged to Kansas City, Kansas. We are glad of this opportunity to correct the mistake and give Kansas City, Missouri, the credit for this excellent showing of motorized fire department equipment.

Prevailing Methods of Garbage Collection and Disposal in American Cities

Part II

By Thomas F. Moore

Secretary, Chamber of Commerce, Waterbury, Conn.

EDITORIAL NOTE:—A committee of the Waterbury Chamber of Commerce has made an extensive and intensive research into the problems of collection and disposal of municipal waste. Questionnaires covering the matter in detail were mailed to about two hundred cities throughout the nation. Typical instances of successful systems in other cities were visited and inspected. In addition to this general survey, a study was made of local conditions for the purpose of adapting to Waterbury's needs those successful features which characterize the methods of other cities. The following is a summary of those portions of the report which are general in application and which will be of value to other communities.

Equipment

The equipment to be used in a particular case depends upon grade, pavement, traffic and general topographical character of the given city, and is an important item of cost and sanitation. Various combinations are found throughout American cities, including double and single wagons, auto trucks of different capacities and trailer systems. Cities which are not especially hilly and which are possessed of wide streets can use a trailer system to advantage, but the custom and practice most common is confinement to the use of the wagon. The reason is readily observed in the routine of collection whereby stops are made at short intervals from door to door, in which an auto would be cumbersome. The electric-driven vehicle would be more expedient than the gasoline-driven, particularly in the matter of short stops, but neither has the flexibility of the wagon. For hauling purposes, the auto is obviously an advantage where loading stations and a trailer system can be adapted, but unless long hauls are necessary, sole use of wagons is advisable, for in a haul of from one to two miles nothing is gained by unloading at a station and then reloading into an auto for the straight run to the place of disposal; the extra equipment, labor and time involved entirely negative the difference in speed of the two kinds of vehicles. Loading stations are advisable for cities of great length where the place of disposal is not situated equidistantly. The point at which a motor vehicle would not be cheaper than a horse-drawn vehicle is a distinct problem

for any locality; in garbage collection and haul it would be at least a two-mile minimum.

Many wagon-builders have special garbage vehicles. It is essential that the wagon be water-tight, well covered with hinged tops of metal or canvas, and of strong frame and construction. The loading height should be sufficiently low to prevent unnecessary effort for the collector.

Bottom-dump wagons are not successful as garbage vehicles because of the large amount of liquid contained in the average production; side or rear dumps are more sanitary and manageable. The capacity of the great majority of wagons used is two cubic yards. Some cities use the single wagon of one-cubic-yard capacity, but this is extravagant, as stated above, except for stops at great intervals. Three-, four- and five-cubic-yard wagons do the work in larger cities. Wagons with sanitary features cost between \$150 and \$500; there are very satisfactory ones on the market at \$300 to \$400.

Cost of Collection

Of all the variable phases of the garbage problem, the cost of collection is most changeable from city to city, for it depends on all the other items. Before the rise of prices to the present level, the cost per ton of garbage collection ranged from \$2 to \$3, the lower figure for the smaller communities. At the new price level, costs have increased so that they now oscillate between \$3 and \$5 per ton collected. Garbage collection and disposal being a true

community problem, affecting every resident, the cost should be met from the general taxation levy.

Education of the Householder

The success of any system of collection and disposal is to a large degree dependent upon the coöperation of the householders. Foreign material must be kept out of the garbage receptacle, and the use of improper receptacles must be strictly prohibited. A scheme of advertising is advisable at various times to insure the proper house treatment.

Some cities use a system of wrapping, insisting that all garbage be wrapped in paper. The idea is most adaptable to places where incineration or dumping is the method of disposal.

Coöperation of City Officials

The thorough coöperation of various city officials is essential to the complete success of any system of municipal activity. Of especial importance is the readiness of the prosecuting attorneys to enforce the ordinances requiring sanitation. A system of inspection to be followed by the sanitary inspectors should be devised, and the assistance of the police is also of decided importance.

Collection Ordinances

The whole machinery of garbage collection can be assisted in its operation by the existence and enforcement of relating ordinances such as the following:

1. An ordinance establishing municipal collection and forbidding the collection of garbage within the city limits by other than municipal employes so authorized, except in emergencies, when the superintendent of garbage may authorize a party to collect it for a definite period of existing necessity.

2. An ordinance defining garbage and forbidding and providing a penalty for the mixing of foreign material with the garbage to be collected.

3. An ordinance establishing the frequency of collection, the type of wagon to be used, etc.

4. An ordinance defining the jurisdiction and authority of the officials employed for the handling of the city's garbage, including the method of handling complaints.

5. An ordinance assuring general sanitation throughout the whole process of collection.

6. An ordinance requiring the occupants of houses to furnish a sufficient number of

receptacles of the proper size and style, and establishing their location.

Disposal

The proper disposal of garbage is one of the most frequently studied problems confronting American communities to-day. This fact is evidenced by the 135 cities out of 596 with a population of over 10,000, or 22 per cent, which are contemplating changes in their method of disposal. The solution varies with the population; hence a small community is subject to an evolutionary requirement in its disposal system. For cities of 100,000 and over, however, the solution is fairly stable, and is becoming more so.

The three factors to be considered principally in determining the correct method for given conditions are: 1, cost; 2, sanitation; 3, utilization of economic content of garbage. While sanitation in disposal affects only a small proportion of the population, it should nevertheless be sought in any system adopted. Aside from sanitation, which is generally secured with greater degree in disposal than in collection, the principal item is cost, which varies with the size of the city as well as with the method, a given method being conducted at profit or at loss in different-sized cities. The type of disposal is also dependent for its success and adaptability on the type of collection. While general principles can be nominated for general conditions, the local complexion of a given community must be thoroughly studied from the viewpoint of each system of disposal, to insure selection of the best combination. The prevailing methods of disposal in American cities are as follows: 1, dumping on land; 2, dumping into large bodies of water; 3, burial; 4, sanitary fill; 5, feeding to swine; 6, incineration; 7, reduction.

1. *Dumping on land.*—Where this is practiced, garbage is dumped with ashes and rubbish on waste land remote from the city. The method is crude and unsanitary, and is fast becoming obsolete. Regardless of the proportion of ashes and other refuse mixed with the garbage, the fermentation and putrefaction will necessarily produce offensive odor and cause a distinct nuisance. This system is applicable, if at all, only to sparsely settled areas where waste land is available at considerable distance from all residences, so that for cities which

have assumed fair proportion it is not worthy of consideration, endangering, as it does, the health, appearance and convenience of the surrounding area.

2. *Dumping into large bodies of water.*—This method is based on the fact that water will dilute most constituents of garbage which do not sink. It has been found, however, that generally the most unwholesome parts of the garbage remain on the surface and produce offense. Great inconvenience and unsanitary conditions have arisen from the refuse washed on shore. New York City carried garbage to sea in scows, a very expensive hauling system and one creating offense from the garbage washed ashore and floating. The Federal Government has stopped this practice on the Mississippi River, and there is general opposition to its inauguration anywhere. Like the first enumerated method, it is both unsanitary and wasteful, but unlike it, it is applicable only to cities situated on very large bodies of water.

3. *Burial.*—Burial is another method particularly applicable to small places and liable to prove offensive and costly. It consists of burying the garbage in small trenches or in ploughing it into the ground. It requires a large amount of land, situated far from the residential area, a fact which means great cost of haul. While this system has been successfully used in some places, it has often created a nuisance, and the chances of its doing so are predominant. Unless the utilized ground is devoted to farming because of its richly fertilized soil, there is great loss of the chemical content of the garbage. From one to three acres, depending on the quality of soil, are required per year for each daily ton of garbage produced. The same ground can be used again after two or three years. Some large cities have adopted this method in the past, but have changed to the more convenient and profitable means which are readily affordable for large cities. This method, then, is limited decidedly to small communities.

4. *Sanitary fill.*—This method is decidedly distinguishable from dumping or burial, in that it is more sanitary, less costly and is productive of eventual return. It consists in filling low places, excavation, water-fronts and the like with the garbage, other refuse and earth, thus producing more marketable and usable ground of consider-

able value in many cases. The garbage is spread in thin layers and covered with sufficient ashes, refuse and pure earth to allow necessary oxidation of the decomposable matter. The bacteria of the soil, under favorable environment, break down the organic substances without causing offensive odors such as would accompany putrefaction or fermentation in the open air. To be effective, careful management of the process is essential, to provide sufficient mixture of inorganic material, burial at the exact depth and in sufficient quantity and necessary drainage facilities. Properly handled, the method is sanitary, economical and often profitable per se. In this way, it will cost anywhere from 50 cents to \$1 per ton disposed, not counting the added value of the reclaimed land, which may more than pay for the disposal.

For cities of 25,000 to 100,000, the value of this method is worthy of consideration. Cities of this size have reached the stage where pig feeding is becoming cumbersome and liable to be offensive and where mechanical means of disposal are likely to be resorted to. For places where the conditions are favorable, the sanitary fill will be as sanitary as and more profitable than incineration. Seattle and New Orleans have successful sanitary filling-in operation. The latter city conducts playgrounds on this reclaimed land, which is made to assume the aspect of a park. Seattle has had considerable success with this method of disposal and has found it to be less costly and more remunerative than the incineration plant. The city has eleven filling spots in various sections, eliminating long hauls. This method, which is really reduction by nature, is worthy of careful thought by cities of 25,000 to 100,000 where conditions provide possibilities for filling sites. There is danger in some cities that it is only temporary, because of scarcity of low places, but it is possible as a temporary method for any city which finds itself without an adequate means of disposal.

5. *Feeding to pigs.*—This method is probably the oldest method of garbage disposal and was the prevailing system thirty years ago. It is applicable and can be satisfactorily adapted to a city having a population under 25,000; modern cities of more than 25,000 generally utilize a mechanical means of disposal. Of the 66 cities estimated as having over 100,000 pop-

ulation in 1916, 20 cities, or about 30 per cent, have this method of disposal, while of the 544 cities having between 10,000 and 100,000 in 1916, 200 cities, or over 36 per cent, feed their garbage to hogs. The reason is partly historical, partly logical. The test of applicability for this method includes strict requirements of sanitation and efficient management. Its history has been marked with both failure and success; many plants throughout the country have been ordered closed to abate a nuisance, while others prosper with satisfactory sanitation.

Garbage as Hog-Feed

The utilization of garbage instead of grain as hog-feed has important economic significance and effect upon the food supply, and this is strongly in its favor when the method of feeding to pigs is adaptable to a given community. One ton of garbage is sufficient to feed from 75 to 100 pigs per day. A ratio of 1 pound of marketable pork to 50 pounds of garbage has been established, and with pork at 20 cents a pound on the hoof—and it now sells for slightly more—garbage as feed is worth \$8 a ton, a figure which does not include cost of collection, haul and maintenance and depreciation of plant. Garbage, however, contains many ingredients which are useless as hog-feed. Pigs will not eat citric fruit, such as oranges, lemons or grapefruit, nor coffee grounds, and such things as soap powder, potash, lye, sawdust and the like are both dangerous and useless and must be disposed of otherwise when left untouched at the pig farm. Although garbage-fed hogs are daily sold as food universally, there is some aversion to this practice, but this is not well based. Some difference between garbage- and grain-fed hogs exists, principally as follows: garbage-fed hogs do not gain as rapidly; they show greater shrinkage in long shipment; they do not dress quite as high for market, being more watery; and they are constantly exposed to cholera. In spite of these facts, garbage-fed hogs are purchased on the market just as readily as grain-fed hogs.

Systems of Disposal by Feeding

This method of disposal, more than any other, is closely related to the system of collection. The various combinations which exist or are possible can be enumerated as follows:

1. Municipal collection—municipal piggery, a combination conducted successfully in a few large American cities. Worcester is the typical example. Its population is 185,000. It has two collections of garbage per week; the piggery is $3\frac{1}{2}$ miles from the city and $6\frac{1}{2}$ miles from the center of production. The cost of collection is very high because of the long haul, and averages \$7.25 per ton. A 40-acre pig farm, costing \$40,000 equipped, holds a minimum herd of 2,000 pigs. The city made a profit of \$59,000 during 27 months of operation. Its success is due to scientific and permanent management.

Such an undertaking is venturesome for a city where the control and supervision is left to the fluctuating run of politics. An expert manager and competent bacteriologist and veterinarians permanently employed, are essential. Unless a person is financially and securely interested, pig-raising is most likely to be a failure. It would not be practical to recommend a municipal piggery under fluctuating political control for any city.

2. Municipal collection—sale to one contractor for disposal by feeding. This is probably the best combination under this system of disposal. The sanitation of collection is handled by the city, while the contractor is more likely to succeed in the piggery business. In this arrangement the contractor pays a certain amount, generally between \$1 and \$2 per ton for the garbage. Quite a number of cities are using this combination of municipal collection and single-contract disposal.

3. Municipal collection—sale to numerous contractors for disposal by feeding. This method is in practice in some American cities. Its success depends upon the coöperation between the municipality and the purchasers of the garbage. There is too great a danger, however, when the amount of garbage fluctuates seasonally, that the amount of garbage will not be sufficient for all and will not be justly proportioned. In the case of a single purchaser, he is able to adapt the number of pigs to the amount in season. This method, again, requires a wholesale supervision, which is difficult. Sanitation is not apt to be as good as under the single-contractor disposal.

4. Contract collection—contract disposal by feeding; both by one party. This method compares with the municipal col-

lection—sale-to-one-contractor method, except for the advantages of municipal collection.

5. Contract collection—sale to many feeders; a combination not likely to produce favorable sanitation and service. There is nothing that works for coöperation between collector and disposer.

6. Contract collection—municipal feeding is possible, but not practical.

7. Scavenger disposal system, wherein garbage is collected by numerous scavengers, who feed it to their own pigs. This is the most promiscuous and unorganized system possible, and, though cheap, is not satisfactory.

Requirements of a Satisfactory Piggery

1. Efficient management is the first requisite of a successful piggery. It includes a technical knowledge of the diseases to which pigs, and especially garbage-fed pigs, are susceptible, and of the serums necessary for cure. The ideal pig farm should be large enough to support the services of a trained bacteriologist, as in Denver's farm. The fact that garbage contains hog-cholera virus and there is daily exposure makes this advisable.

2. Distance from the city is quite necessary. The farm should be at least three or, better, more miles from the well-populated areas.

3. Situation. Good gravel land with sufficient drainage is likely to give satisfaction. The farm should be as far from any dwelling as is possible, and in that section of the city least liable to extend its boundaries of habitation.

4. Sanitation in the general management is of sufficient importance to deserve special emphasis. The city authorities should insist always on high standards of cleanliness.

Perhaps more so than other questions of policy, the consideration of pig-feeding as a means of disposal must be decided after a study of local conditions, political, economic and topographical.

Incineration

Incineration is a form of disposal introduced about thirty-five years ago. Since then there have been a few hundred plants of various designs established throughout the country. The theory of the incinerator is to cleanse and destroy by fire all com-

bustible refuse, including garbage, rubbish and ashes. An incineration plant properly equipped is probably the cleanest and most sanitary method of disposal for all kinds of municipal waste. It produces little, if any, odor, and reduces all organic to inorganic matter. Incinerators of an early date were commonly called crematories and were too often a nuisance; the modern incinerator is more properly called a destructor. Most of these are of brick construction and have a fairly high rate of depreciation.

One type of incinerator used in a number of cities is the product of the Decarie Incinerator Company of Minneapolis. This destructor is of steel, water-jacket construction and has modern appliances for eliminating noxious odors and other inconveniences of the old type. The cost of installation is high, but the cost of maintenance and operation and the depreciation are ordinary. A successful incinerator for large cities is manufactured by the Destructor Company, New York, and is extensively used in England and the United States. One hundred and two cities out of 620, or 16 per cent, have incineration. This number includes 19 of the 66 cities having a population over 100,000.

Incineration is generally used for all kinds of refuse, principally garbage and rubbish. Ashes have an average coal content of 10 per cent, but it is impractical to incinerate for this small degree of destruction. Tin cans and other metal are reduced to clinker, and garbage and combustible rubbish become a fine ash. Incineration plants produce a considerable amount of steam, one pound of refuse creating a like amount of steam. A few cities have utilized this to advantage, but in most cases it has not been used because of the seasonal, daily and hourly fluctuation in the amount of refuse received at the plant, and because of the lack of connection between the incinerator and the purposes to which it could be adapted.

As a method of garbage disposal alone, incineration, while it seems most sanitary, is open to criticism as uneconomical, in that it is a complete waste of chemical organic matter. Many criticize the total destruction of an amount of garbage which could be adapted to the food situation. About 600,000 tons of garbage are destroyed per year. If all the garbage now being de-

stroyed in cities of from 10,000 to 100,000 population were used as hog feed, it would produce about 30,000,000 pounds of pork, with only 50 per cent efficiency. During the war, incineration was especially inadvisable on this account.

However, this process is worthy of the sincere consideration of communities of small or average size, especially of cities from 10,000 to 50,000 population. Whether a city of 50,000 to 100,000 population should establish this form depends upon the prospect of growth of that city both as to time and degree. For a city of 50,000 with little prospect of reaching 70,000 in less than twenty years, incineration is practical; while for one which will have 70,000 population in five years and 80,000 or 90,000 in ten years, reduction seems more practical. Cities of 70,000 and over with fair prospect of growth will probably find it more economical and inexpensive to choose reduction rather than incineration as a permanent policy, looking to the future. While incineration may often be at present less expensive and may continue so for a few years, reduction, as a definite, permanent policy, is the safer method. In any case, it is a question of prospective growth.

Choice of incineration must be made with due consideration of size, prospective growth and the policy of the city in the collection and disposal of all municipal refuse.

Cost of Installation, Operation and Maintenance of Incinerators

Incineration plants of brick and tile construction cost less than the modern Decarie steel-jacketed plant, but depreciate much more rapidly, and often require more labor for operation. As a permanent investment, with due concern for sanitation, a steel plant is by far the most practical and worthy of recommendation. The cost of a Decarie steel-jacketed incinerator with a 70-ton capacity per 24 hours of operation, or approximately 30 tons per 10 hours of operation, would be between \$105,000 and \$108,000, not including the site, while the cost of a 100-ton plant on the above basis would be between \$134,000 and \$138,000. The depreciation on such a plant would be ordinary, averaging 4 per cent to 5 per cent per year. This would mean a life of 20 to 25 years.

In an incinerator burning garbage only,

the cost of operation would include an expense of 50 pounds of coal per ton of garbage burned, but if 25 per cent refuse were included, no commercial fuel would be necessary. The labor cost is estimated to be between 50 and 60 cents per ton of refuse incinerated.

Reduction

The most modern, and in many respects the most economical, method of garbage disposal is that which is termed reduction. This is a method of extracting from the garbage its inherent values, at the same time reducing it from an obnoxious matter to a refined and wholesome product. The inductive features of this means of disposal are its economy in conserving and utilizing the natural chemical value of the garbage and its sanitation in sterilizing the organic matter.

The introduction of reduction plants, or rendering plants, as they were first called, was historically subsequent to the institution of incinerators. When it was ascertained that garbage contained recoverable values inherent in the fats and chemical solids, mechanical means were devised to detract these and at the same time cleanse the garbage by heat. As is natural, the first attempts were more or less crude, resulting in only partial salvage of the inherent values, also in heavy cost of rendering, and producing obnoxious odors, a nuisance to the neighborhood, and depreciation of land values, equal and often greater than the salvage resulting. In late years, some, and principally one, type of reduction plant, have been built with freedom from unwholesome odors.

The first type of reduction was a drying process, cheapest of all, but not producing full recovery of grease because of carbonization. Offensive odors originate from the gases, which cannot be economically deodorized. It is now used in only three cities, Chicago, Alleghany and Buffalo.

The cooking method of reduction was next introduced, and also produced offensive odors, which in many cases, however, were to a degree eliminated at considerable expense, and by reducing the reclaimable values. Tankage from the cooking process has been declared suspicious as a fertilizer because of the length of time necessary for the chemicals to be released in the soil. This method is the most widely used be-

cause up to a recent period it was the most modern process existing. Approximately twenty American cities have reduction plants of this process.

The most modern type of reduction plant is a process of dehydration, instead of digestion. Plants have been established in New York, Los Angeles and New Bedford and are under construction in other American cities. The owners of the letters patent on this process guarantee sterilization of the material treated, elimination of nuisance during the process, and recovery of all valuable properties by the operation. The products obtained from one ton of garbage are as follows:

1 1/5-ton fertilizer tankage now valued at about	
\$15 per ton	\$3.00
70 pounds grease worth 7 cents per pound....	4.90
30 pounds bones worth 1 1/2 cents per pound...	4.45

Value of recovered products, approximately. \$8.35

Twenty-nine of the largest cities having reduction plants produce 36,000 tons of grease and 150,000 tons of fertilizer per annum valued at \$11,000,000. This grease is sufficient to make 200,000,000 12-ounce cakes of soap. The fertilizer from twenty-five cities now wasting their garbage would replace the nitrogen removed from the soil for about 2,600,000 bushels of wheat. Our present stock of agricultural fertilizer is so depleted that reduction tankage is a natural resource not to be overlooked.

Reduction is not practical for smaller cities, the overhead charges being heavy, and must be spread over a large output of recovered values to be economical. This process is especially adapted to cities of 90,000 population and upward, and to those with a prospect of quick growth. In cities of 150,000 to 200,000 the disposal should result in a profit rather than an expense. The city of Los Angeles receives 51 cents per ton of garbage delivered at the plant of a contractor, who conducts a reduction plant of the dehydration process in the

heart of the city. As a definite and permanent policy for the future of a growing community, the up-to-date reduction process is economical and commendable.

Cost of Installation, Maintenance and Operation of Reduction Plants

For a city of 100,000, which is close to the minimum size in which reduction is practical, the cost of installation would be between \$80,000 and \$100,000, depending upon local conditions as to value of site and cost of building. The cost for larger cities would not increase as much as the proportionate difference between the populations.

The maintenance cost is heavier than in an incineration plant, because of the more intricate mechanical nature of this process. Depreciation is somewhat faster also.

The operation of a reduction plant requires more men with greater ability than does that of an incinerator, about 15 men being required to conduct the operation in a plant for a city of 100,000 people. The reduction process would not ordinarily result in actual profit for a city of 100,000, because the overhead expense is too heavy to be met by the revenue from the amount of garbage reduced. However, reduction is cheaper than incineration for a city of this size, and should continue to become cheaper in the future as the city and the amount of garbage increase in size, whereas incineration is gradually more expensive under the same conditions.

Cities of 125,000 to 150,000 population should estimate closely on the cost and return of the reduction of their garbage, and in most cases should be able to estimate it as a financially profitable proposition. For municipalities of 200,000 population and upward, the dehydration process of reduction is by far the most practical and profitable and assures a high degree of sanitation and public satisfaction.

How Much Do Your Municipal Employes Receive?

The Bureau of Municipal Research of Philadelphia states that a family of two adults and three growing children require a minimum annual income of \$1,803.14 to maintain the standard of living produced by \$1,000 before the war.

Prof. Royal S. Meeker, Federal Commissioner of Labor Statistics, has estimated that the minimum required by a family of five is \$2,262.

Do the municipal employes of your city receive a living wage?

Personality and Human Beings in Town-Planning Work

By Theodora Kimball

Librarian, School of Landscape Architecture, Harvard University; Honorary Librarian, American City Planning Institute

“**S**ELLING the plan”—we are hearing this new phase in our city and town-planning meetings. It is a good phrase, borrowed from business, where the commodity must be sold to make the business go. And city planners are waking up to the need of turning planning into physical accomplishment by means of the same methods which make for success in salesmanship.

Personality and a real understanding of popular psychology are two of the requisites of the good salesman, as they are equally of the politician, the social worker, the actor, the novelist. The individual is making an appeal to other individuals, and if he gets out of touch with those to whom he appeals, his influence is lost and his work will fail. Likewise, any man who has to secure through public officials, for the benefit of the people they represent, the adoption and financing of a city plan cannot afford to disregard these elements of salesmanship. And although he may be co-operating with other technical men of perhaps more persuasive personality, nevertheless he has his committees to convince, his human problems to understand, and his ideas to get expressed in appealing terms. Where a town is unusually blessed with local selling ability the personality of technicians may be less essential, but their comprehension of individual psychology and of “mass psychology” is still vital.

Many towns need salesmanship combined with technical skill in one man. The passive personality is not the one to “put across” town planning. We need vitality and that quality which seems to have crystallized in the good word “pep.” Neither is the man of purely technical interests divorced from their human bases a desirable planner. A genuine social interest, a sympathetic personal knowledge of the wants of human beings—all kinds of human beings—is just as essential to the engineer in town planning as it is to the social reformer. And appreciation of popu-

lar habits and desires, and of the points of view involved in the people’s own expression of them, is far more necessary to the architect than a Beaux Arts training. Of themselves, strong bridges and beautiful buildings harmoniously grouped have no merit in the city plan. Only as they are properly located and adapted to the needs of those who will use them are they good.

A broad background of real social experience on the part of the town planner makes for a human personality. The ability to express himself by speech or writing in *human* terms is apt to follow. City planning reports need not be dull. They are human documents. Their form of presentation and their illustrations may be such as to catch and hold the attention of the man who is going to live in that city plan. There may need to be two, or even three, editions of a report differently presented to meet technical and popular need. It may not be necessary in some cases to print the full technical report. There should be at any rate a popular printed form, widely circulated. If it can be written by the planner himself, not merely epitomized in catchy terms by someone who does not see parts in terms of the whole, much will be gained.

In engaging a town planner or a committee of experts, a town inevitably considers this question of personality. People are usually chosen who work well together and effectively, also with the local committee. The man who can harmonize apparently conflicting special technical interests while smoothing out local differences and enlisting hearty popular support, is the man who sees widely and deeply and who expresses his personality in human terms. Thomas Adams, of Canada, said at the Cincinnati National Conference on City Planning: “What we need is more red blood.” The education of the public to the value of town planning depends upon the humanity and dynamic force of those engaged in the movement.

Protection of Water-Supplies by Sewage Purification

By Harry B. Hommon

Associate Sanitary Engineer, U. S. Public Health Service

ONE of the most important questions confronting many of our cities today is that of securing and maintaining a water-supply that is free of the organisms of disease and otherwise suitable for domestic and industrial purposes. As our cities grow in size and increase in number the problem becomes more complex, for the reason that the watercourses of the country are used, on one hand, as a source of domestic supply, and on the other, as a means of sewage disposal. It is common practice for a city to take its water from a river at the up-stream side and discharge it below the city as sewage. This dual use of a watercourse has been accepted and recognized by the courts as coming within the rights of the riparian proprietor, but only in so far as the privileges claimed do not conflict with similar rights of others located on the same body of water.

It is not always an easy matter, however, to decide where the rights of one party end and the lawful privileges of another begin. In the past, and to a certain extent at the present time, courts have been called upon to decide controversies arising from the use of streams as a means of disposing of sewage and other wastes. More recently many states have passed laws to regulate stream pollution, and the results have been so satisfactory that it is believed that within a few years all the states will have laws on their statute books which will permit active control over the purity of the watercourses in the country within the boundaries of the states.

One of the most important results that have come from the court decisions handed down and the state laws that have been passed in relation to stream pollution has been the treatment of sewage as a means of protecting water-supplies. It may be of interest in this connection to quote the fundamental principles given by Montgomery and Phelps,* which the courts have

recognized as the basis for their decisions:

"The basic rule in common law has been stated to be that each riparian proprietor has the right to have the stream come down to him with its quality unimpaired and with its quantity undiminished.

"But expressions like the above are extreme statements of the rule and cannot be accepted literally.

"That is to say, each riparian proprietor is interested, on the one hand, in having the water come down to him in its natural state and in its full volume. On the other hand, he is interested in making the largest use of the stream which his convenience or interest may dictate; and, since almost any use of the stream has some tendency either to diminish the volume or lessen its purity, or both, it follows that a rule which would preclude each riparian owner from polluting the stream at all or from diminishing its volume at all would defeat its own purpose; and this has been recognized by the courts."

Quoting further from the report referred to above, it is shown that municipalities have no further rights than individuals:

"By the great weight of authority, municipalities have not greater rights than individuals to pollute watercourses and must respond in damages for any injury caused to a lower riparian proprietor and may be enjoined continuing the pollution."

It is thus seen that the courts have recognized the right of an individual, corporation or city to use a watercourse as a means of carrying off its sewage, but only to such an extent that riparian proprietors lower down on the same stream will not be deprived of the natural rights accruing from their vested property rights.

If the water in the rivers and lakes of the thickly settled portions of the country were used only for such purposes as the courts and state laws have held as coming within the riparian proprietary rights, it is doubtful whether these sources would furnish a water satisfactory for domestic purposes without some degree of treatment. Even water-supplies obtained from protected watersheds located in the hills, mountains, or on the headwaters of streams are often sterilized to guard against accidental pollution.

* Stream Pollution: A Digest of Judicial Decisions and a Compilation of Legislation Relating to the Subject. Public Health Bulletin No. 87.

In considering, therefore, the protection of water-supplies by sewage treatment, the important problem is not so much as to whether any given water requires purification, but rather what effect the presence of sewage in unusual amounts will have on the processes of treatment and the character of the water produced. The term sewage is used in the broader sense to include all liquid wastes discharged either from a city's sewers or through outlets from manufacturing plants outside the city limits.

Using the broader meaning of the word sewage, it becomes apparent at once that a city must consider many factors when deciding whether any given stream that contains a large amount of untreated liquid wastes from other communities is a suitable source for a domestic water-supply. These factors will be discussed from the standpoint of the relation they bear to the operation of a purification plant and the quality of water produced.

1 *The bacterial content of the water.* A stream containing comparatively fresh sewage in large amounts will have large numbers of pathogenic organisms, and the potential danger of using such a water, even though filtered and sterilized, may be justification for rejecting the supply or cause for requiring cities or towns up-stream to treat their sewage.

2 *Color.* Rivers or lake waters may contain sewage and colored industrial waste to such an extent that the ordinary purification processes will not remove the color. Dye wastes, tannery, and sulphite wastes from paper manufacturing plants are often discharged into streams in large volumes, and the color imparted to the water persists for long distances.

3 *Alkalinity.* The normal hardness of river water may be so increased by the presence of sewage and industrial wastes that softening processes will be required; or spent acids may be discharged into a river in sufficient amounts to reduce the alkalinity, so that where coagulation is necessary, an additional amount of chemicals will have to be added.

4 *Odors and tastes.* River water may have pronounced odors and tastes due to the presence of some industrial wastes. Those from gas manufacturing and oil refineries are the most common.

5 *Temperature.* Industrial establishments located on small streams may use a large part of the stream flow for cooling and other industrial purposes and thereby raise the temperature of the water of the entire stream. The writer is familiar with one case where the water at the intake of a filtration plant has a temperature of 137° Fahrenheit in the summer time.

6 *The esthetic consideration.* Rivers carry-

ing floating particles common to sewage, such as pieces of fecal matter, soap, matches, paper and other miscellaneous material, does not add to the attractiveness of a water as a source for drinking purposes. No matter how efficient filtration may be, public sentiment is against using water from sources in which direct evidences of sewage pollution can be seen, and it is not necessary that such evidence be in the immediate neighborhood of the water intake.

The extent that the influences noted above will have on any particular water-supply will depend on local conditions. For example, the sewage and industrial wastes from the Pittsburgh District on the upper Ohio River do not interfere with the use of the river water at Cincinnati for domestic purposes, and the presence of these wastes does not place an undue burden on the filtration plant. In this particular case the distance between the two cities on the Ohio River, and the dilution, are sufficient to permit self-purification to take place.

There are, however, many cities and towns located on streams that would furnish suitable water-supplies for domestic purposes if it were not for the fact that the time of flow and dilution of sewage from neighboring communities above are not sufficient for self-purification to take place. In such cases—and there are many of them—sewage treatment should be required, the extent, however, depending upon local conditions. Where the dilution is high but the distance between the point of sewage discharge and water intake is comparatively short, fine screens or some form of tank treatment followed by sterilization may be sufficient. If the dilution and time of flow of sewage discharged into a stream from one city is insufficient to permit self-purification to take place before reaching the water intake of another, complete oxidation in a sewage treatment plant is necessary, and in some cases sterilization will be required in addition. Each problem of sewage disposal is, therefore, a special study in itself, and before plans are prepared a thorough examination should be made to learn what the local requirements are and what design of sewage treatment plant will meet them most satisfactorily.

In water treatment plants it has been possible to adopt standards of purification that are practical, and they are being maintained throughout the country. In sewage treatment, however, the purpose is not to maintain a standard which will apply to

all plants, but rather to so modify the sewage that the natural purifying power of the water in the streams will complete the oxidation of the organic matter remaining in the effluent of the disposal plant. In other words, the effluent from water purification plants must conform to well-defined, uniform standards of quality, while the effluent from sewage treatment plants may be of varying quality depending on the power of the receiving body of diluting water to bring the purification to the required standard.

The science of sewage treatment has progressed to the point where special processes can be recommended for purifying sewage to any degree required. The type of plant best suited for any given city should be determined, however, by a competent sanitary engineer. Enough money should be available for constructing the plant recommended, and provision should be made for the supervision of the operation. The failure of a large number of sewage disposal plants in operation to-day to produce satisfactory effluents is due in a very large measure either to the fact that enough funds were not available to build the treatment plant as large as was recommended by the engineer who designed it, or that it has been outgrown, or that there is a lack of control over the operation. The mistakes that have been made are not inherent in the principle involved, so that cities wishing to purify their sewage for the protection of water-supplies can install and operate properly designed treatment plants with confidence that they will produce the results expected from them.

The question of deciding when one city is discharging more sewage into a stream than its self-purifying powers can take care of before reaching the water intake of another city lower down on the same stream is not always easy to determine. In extreme cases there will be found, on the one hand, situations where the water at the intake of a city will contain direct evidences of sewage pollution such as floating material common to sewage, and, on the other hand, places where the only evidence of sewage that can be found in the water will be the increased numbers of bacteria and an excess of organic matter. Only a very superficial examination need be made in the first case to decide whether sewage treat-

ment is necessary for the protection of a water-supply, but at the other extreme a very careful survey of the entire situation must be made, including chemical and bacteriological examinations of the water that extend over considerable periods of time.

Courts Cannot Accurately Decide on Stream Pollution

Formerly when the courts were called upon to decide the relative merits of controversies arising from questions of stream pollution, the evidence was, naturally, more or less biased by the purpose for which it was to be used. Even where technical evidence was given there was a tendency to omit data which might not advance the interests of clients. From the very fact that the parties to such a suit were interested primarily in winning their case, and because judges and jurymen could not be expected to be familiar with the science of sewage treatment, water purification, and the factors entering into stream pollution, it was not always possible to settle cases on their true merits. There never was, however, any doubt as to the fundamental law regarding the riparian proprietary rights, discussed earlier in this paper, but the evidence was lacking in some cases upon which proper interpretation could be made.

A few years ago it became apparent that the courts were not the proper places to decide whether a stream of water had become so badly polluted with sewage that the water was unfit for domestic purposes. It was felt that the greatest use possible should be made of our watercourses in carrying off the liquid wastes from cities, and that the authority for deciding when a stream had reached its capacity for carrying sewage should be vested in the state. Accordingly, many states enacted laws for controlling stream pollution, and authority for their enforcement has been given to the various state boards of health. For the purpose of carrying out the purpose and intent of these laws, sanitary engineering departments have been developed. These include a chief engineer and assistants, chemists, bacteriologists and laboratory facilities.

It is possible for any state, through such an organization, to keep watch over the streams within its boundaries and to require that they be maintained in a sanitary

condition. When controversies do arise over questions of stream pollution, the states should have the means of collecting the important data by experts and presenting the information in an unbiased manner. Stream pollution cases between individuals and cities, however, ought never to reach the courts in states having a well-organized sanitary engineering department, for the reason that the states should require that corrective measures be applied before conditions reach the point where a lawsuit becomes necessary.

State and National Control of Stream Pollution

Every state department of health should have a competent sanitary engineering department with sufficient personnel and equipment to look after the sanitary condition of all the watercourses within the state. The department will be almost useless, however, if the necessary authority is not given to require that its recommendations be put into effect. The protection of water-supplies by enforcement of sewage treatment is a function of the state acting through its department of health, and the extent to which waterways sanitation is enforced will depend upon the laws passed to require sewage treatment, and the personnel and equipment provided to carry out the work.

The states have jurisdiction over the rivers and lakes within their boundaries, but there is no authority at present to require cities located on interstate streams to treat their sewage for the protection of

water-supplies taken from these streams by cities in other states. The industries along our main waterways are sure to increase in size and number, and with them the population will grow apace. The time must come, therefore, when the streams can no longer be utilized, as they are to-day, for carrying off the raw sewage and wastes from large and thickly settled communities, without seriously affecting the use of the water for domestic purposes. The National Government alone has the authority to control the pollution of interstate streams, and it would appear to be in the interest of economy as well as the best interests of future generations for the Government to guard these streams against excessive pollution that may be difficult and expensive to remove if allowed to progress too far. If laws are passed by the Government for the control of sanitation in the interstate streams, they should be closely correlated with the laws of the various states relating to the intrastate streams.

The United States Public Health Service, under authority of an act of Congress passed in August, 1912, has been making a study of the pollution of the interstate rivers, but this law provides only for an investigation of conditions as they exist to-day. It is believed, however, that the data obtained will eventually be used as a basis for framing the necessary laws for preserving the interstate rivers of our country as a safe source of water-supplies for the large cities located on them.

ACKNOWLEDGMENT.—From a paper read at a recent meeting of the Illinois Section of the American Water Works Association.

The Elimination of Electrolysis of Water-Mains

Present Coöperative Investigations Should Mitigate This Trouble

THOSE who were concerned with the operation of either electric railways or water-works in the nineties and the early years of the present century will recall the incredulity and surprise attending the first evidences of stray-current electrolysis, and how this surprise was followed by dismay as increasing numbers of pipes were unearthed showing the ravages of un-

confined currents. It was a phenomenon entirely new and unforeseen to engineers, and one for which no effective remedy was known. In those early days the return circuit was not given the attention that it now receives, partly because the importance of the electrolysis problem was not appreciated, partly because of the primitive state of the art of rail bonding, and often because

the earth was intentionally relied upon to carry the return current, assuming that it offered no electrical resistance.

Early Neglect of This Problem

The history of the development of rail bonding is in itself an interesting story, and those who are familiar with it know that the number of types of bonds which have been used is legion. The bonded rail joint has been the weakest link in the return circuit, and until the adoption of the welded joint, now commonly used in the larger cities, was responsible more than any other one thing for the extremely bad electrolysis conditions which existed in many cities. With the improvement of the return circuit through the use of heavier rails, better bonds, welded joints and supplementary feeders, railway loads also increased, and often at a rate far greater than the increase in the return circuit. The result was that with the phenomenal growth of the electric railways, those factors which were not vitally and immediately necessary to the operation of the cars were often slighted or entirely neglected. In not a few instances the electrolysis problem was one of the factors neglected during this early period.

From the very first appearance of electrolysis, nearly thirty years ago, there has been no end of speculation and uncertainty concerning the whole subject. The difficulty of observing the extent and progress of damage on underground structures; the rapidly changing conditions resulting from extensions, improvements and abandoned power stations; the great variations in local condition, as, for example, earth resistance and different types of road-beds, as well as many other factors, all contributed to the difficulty of adequately analyzing and solving the problem.

Many methods of correcting the trouble were proposed and used, but no standard practice has ever been agreed upon in this country other than the maintenance of the return circuit to the highest standard practicable. The cable-owning interests early found that a substantial degree of protection could be secured by draining the sheaths of the cables in areas where they were found to be positive to the earth, to the negative railway bus or to some other point on the return circuit, and this prac-

tice has been, and now is, consistently followed. The same method was employed in some cases by the railways and in others by the water and gas companies in an effort to protect the underground piping systems. This method of electrolysis mitigation, known as pipe drainage, though widely used, is in disrepute among many engineers.

Laboratory and Field Investigations

It was because of the wide divergence of opinion and the lack of engineering knowledge on the subject of electrolysis, as exhibited by many requests for information, that the National Bureau of Standards took up a general study of the whole problem in 1910. The first efforts of the Bureau in this field were devoted to a study of some of the more important fundamental principles involved. Laboratory and field investigations were carried out and reports published on many phases of the electrolysis problem. These included: electrolysis in concrete; the laws governing the electrolytic corrosion of iron and lead; earth resistance and its relation to electrolysis of underground structures; leakage resistance of electric railway road-beds; modern practice in the construction and maintenance of rail joints and bonds; and the principal methods that have been proposed for electrolysis mitigation.

Numerous field surveys were also made by the Bureau of Standards, and these have not only formed the basis for a publication on the methods of making electrolysis surveys, but have given an opportunity to experiment with different methods of mitigation. The reports of these various laboratory and field investigations have had a wide distribution and have been very helpful to engineers in bringing about better electrolysis conditions.

American Committee on Electrolysis

In 1913, through the activity of some members of the American Institute of Electrical Engineers, the American Committee on Electrolysis, first known as the Joint National Committee on Electrolysis, was organized, representing the following organizations in addition to that already mentioned: American Electric Railway Association, American Gas Association, American Railway Engineering Association, American Telephone and Telegraph Company, American Water Works Asso-

ciation, National Electric Light Association, Natural Gas Association, National Bureau of Standards. At the second regular meeting of the committee the following statement was made as the reason for its formation and is evidence that the committee was fully aware of conditions as they existed at that time:

"Electrolytic controversies have in the past given rise to unnecessary and acrimonious disputes, and not infrequently have resulted in litigation between the corporations concerned. The usual procedure in disputes of this kind has been for each side to employ one or more electrical experts, who generally disagree as to the cause of the trouble and the remedies therefor. The dispute sometimes gets into the newspapers, occasioning unpleasant notoriety and resulting in more or less drastic municipal action by the city government concerned. Much of this could be avoided if a body such as this committee could be created which would consider broadly the questions covered by the controversy, without attempting to pass upon the questions at issue, but to report back to their respective organizations, so that in time the committee would come to be recognized as a neutral body whose decisions would be authoritative, the same as the Standards Committee of the American Institute of Electrical Engineers in connection with matters of definition and standardization, which is a recognized authority that nobody ever attempts to question. With that end in view, the Institute initiated the movement to organize a national body to consider the general subject and agree upon any basic principles or methods of procedure to be followed in the case of electrolysis disputes."

In 1916 the American Committee printed a preliminary report for submission to its principals under the following general captions:

- I. Principles and Definitions
- II. Methods of Making Electrolysis Surveys
- III. American Practice
- IV. European Practice
- V. Bibliography

No effort was made to standardize practice or to agree on methods of mitigation.

After the preparation of this report and during the period of the war, the committee was inactive. The Bureau of Standards also, except for making a few surveys, devoted all its activities to military and naval problems for a period of two years or more, so that no material progress in electrolysis mitigation was made during this period.

It thus appears that at the present time, although much valuable research work has been done and the individual utility com-

panies, working independently, have in many cities brought about greatly improved electrolysis conditions, there still remains much difference of opinion as to the applicability of the various methods of mitigation, and the conditions described in 1914 at the organization of this Joint Committee and which the committee was formed to correct, are, in large measure, still prevalent.

Coöperation in Settling Controversies

With the revival of activities a year ago, the American Committee on Electrolysis appointed a sub-committee, known as the Research Sub-Committee, to conduct investigations into controversial questions in electrolysis in coöperation with the Bureau of Standards. The one subject more than any other upon which engineers have disagreed and which has stood in the way of progress is that of pipe drainage. In spite of the wide application of this principle, there is much difference of opinion as to the extent to which it should be used. A number of questions, as, for example, joint electrolysis at high resistance pipe joints, interchange of current between unequally drained systems, and gas explosions on heavily drained pipes, can be settled only by comprehensive study in the field, in coöperation with the local pipe-owning companies.

The Research Sub-Committee and the Bureau of Standards are accordingly attacking these problems and are receiving the cordial support of a number of water and gas companies.

With the street railway, the pipe-owning companies and municipalities and the lead cable interests all working together in harmony, assisted by the Bureau of Standards, a neutral body, conditions are most favorable for determining the facts relating to electrolysis. It is only by coöperation of this nature that complex problems involving the welfare of so many interests can be adequately dealt with. With this arrangement for coöperation it is not unreasonable to hope that ultimately the American Committee on Electrolysis will be able to report definitely on all methods of mitigation, describing the advantages and limitations of each, and so far as possible to recommend suitable standards of practice.

Where Public Schools and Playgrounds Have Joined Forces to Utilize the Play Instinct

The Recreation Program of Oakland, Calif.

By Chester Geppert Wallis

THE playground movement in America, although yet in its infancy, has fulfilled such a big need, has been so immediately productive of results in character building and physical development of the nation's youth that it has grown by leaps and bounds. So big is the vision back of the movement, so widespread the influence of the leisure hour program, so many points of contact are made, that it is safe to say that at last a big common ground has been found wherein lies the real democracy of the future.

In no city where playgrounds have been established has there been a more successful working out of the play ideal than in Oakland, Calif., where the playgrounds and the public schools have joined forces in utilizing the play instinct as an educational asset and in bringing practically every child in the city in touch with the wholesome influence of the play program.

In 1914 a committee was appointed for

the purpose of evolving a plan whereby the Board of Education and the Board of Playground Directors might coördinate their efforts, make public playgrounds of the school yards, make community houses of the school buildings and dovetail the educational program of the school and the playground in such a way that where the school teacher leaves off, the playground director takes up the work, and vice versa.

The Framework of the Plan

The following report was submitted by this committee to the two boards and the plan immediately put into execution:

1. That the Board of Playground Directors of the city of Oakland be given the general control and supervision of the play activities, including the appointment and control of playground teachers and the equipment of the elementary school playgrounds outside of school hours.

2. That wherever practicable this supervision be exercised in behalf of adults as well as school children and include all school athletics, games, plays, dancing, evening recreation centers in school buildings, exclusive of the needs of the School Department, shower baths, dressing rooms, playground supply room, pageants and festivals.

3. That the Superintendent of Recreation of the city of Oakland be made ex-officio Director of School Playgrounds and Physical Education.

4. That the expense of equipment, maintenance and instruction for the school playgrounds be



THE PULL UP IN THE OAKLAND BOYS' DECATHLON

borne equally by the Board of Education and the Board of Playground Directors of the city of Oakland.

5. That the relation of the Superintendent of School Playgrounds to the school principal shall be the same as that of other assistants of the Superintendent of Schools.

6. That the school principal shall be responsible for the school playground and for the conduct of the playground supervisors when he is present; and that the playground supervisors shall be responsible to him when he is in charge of the school.

7. That copies of all rules and regulations governing school yard playgrounds or recreation centers or playground supervisors shall be furnished to school principals.

8. The Superintendent of Playgrounds has full control over athletics and play activities outside of school hours, and of physical education activities during school hours.

Aside from the ethical value of this program, there ensued a great economic saving to the city in the subsequent purchase and equipment of ground. A large district known as East Oakland was annexed to the city at about this time, and in planning the park, school, and playground areas these were combined, and large tracts and athletic fields, some as large as 17 acres, were purchased adjacent to the school buildings and equipped as playgrounds. The expense of surfacing, equipping and maintaining these school playgrounds is met by the Board of Education, while the park playgrounds and Lake Merritt are maintained by the Recreation Department. This arrangement gives the city 51 public playgrounds, 41 being school grounds and 10 park playgrounds, including Lake Merritt, the city's great water playground and recreation center.

To carry out this joint program, the services were obtained of a man who had successfully worked out in one of the public high schools a program of athletics that was in a small way a practical demonstration of the new plan. This man, Jay B.



PRACTICING THE SIT UP

Nash, later became Superintendent of Recreation, in which position he has been able to carry out his early ideals to their fullest.

The Decathlon

The Fremont plan of athletics, so called from the name of the high school where the experiment was made, was a forerunner of the general policy adopted by the Recreation Department of Oakland and later by the entire state. Physical education became a part of the school curriculum, and credits were given for the work in athletics. Team games were resolved into their elementary movements, which exercises replaced the more formal gymnastics of the turnverein type. These exercises became a continuation of the study of physiology and hygiene and were later put into effect on the playgrounds in actual play.

Borrowing from the comprehensive program of the ancient Greeks in physical training, a Decathlon, or series of ten events, was prepared to serve as the basis for the teaching periods during school hours. These events served as a means of scoring the skill and development of the children and of preparing them to take part intelligently in the team games on the playgrounds at recess and after school hours.

These events are:

BOYS

1. Pull up (chinning)
2. Soccer kick for goal
3. Basket-ball throw for distance
4. Basket-ball throw for goal
5. Running broad jump
6. Running high jump
7. Dash
8. Baseball throw for accuracy
9. Push up
10. Sit up

GIRLS

1. Traveling rings or pull up
2. Hockey goal shoot
3. Basket-ball throw for distance
4. Basket-ball throw for goal
5. Volley ball serve
6. Jump and reach
7. Dash
8. Baseball throw for accuracy
9. Push up
10. Sit up



SOME OF THE ENTRIES IN THE OAKLAND PLAYGROUND PET SHOW

The results of the Decathlon have been tremendous, and there are few children in the public schools of Oakland who are not proficient and enthusiastic athletes. Where the elementary movements of a game have been taught as part of the school class work, it is found that children are not so timid about joining in the team play. Those underdeveloped boys and girls who need the exercise most, who formerly lost out by their timidity and lack of ability, are now ready to take their places in the lists by reason of previous training.

The annual track meets, in which all schools in the city participate, show a steady increase in physical development, posture and number of entries. The spring meet for 1920 was a wonderfully inspiring sight that testified to the success of a standardized course of physical instruction. There were more than six thousand entries, requiring three hundred officials to run off the various events.

To provide a similar opportunity for a general athletic meet for the girls, a play day is held in the fall, in which the same steady growth in numbers and development is apparent. The play day program includes folk dancing, circle and singing games, matched games and athletic contests and the presentation of short plays by the various dramatic clubs.

As a direct result of the tying up of the efforts of school and playground boards, a state law was passed in 1917 making phy-

sical education a compulsory part of the educational system. In order to facilitate the inauguration of the plan, Mr. Nash was made Assistant State Superintendent of Physical Education. He held this position long enough to see the Decathlon installed in every school in the state, after which he returned to give his entire attention to the broader community needs of recreation work.

The Decathlon program is so constituted that it meets the needs of the rural schools with poorly equipped grounds as well as those of the more pretentious city grounds, as it requires a minimum of material and equipment.

The Annual Pet Show

Among other phases of the play education of the Oakland Recreation Department which engage the attention of the children during the year, culminating in an annual event, is the playground pet show, held at the beginning of the school year at one of the larger park playgrounds.

There are few children who do not pin their affections upon some bit of animal life, and the entries are numerous and varied, ranging from baby chicks to ponies. Because of the latitude given in the classification of entries, it is necessary to have many blue ribbons to bestow upon the winners, as many of them are in a class by themselves—for instance, the quackless duck and the bob-tailed kitten entered in the last show.

Water Waste and How to Prevent It

By P. H. Beauvais
City Manager, Manistee, Mich.

THERE is probably no greater problem to be solved by the Superintendent of a Water Department than that of water waste. The immense value of metered service as a stepping-stone to waste elimination has been quickly realized by the majority of water superintendents, and, wherever possible, depending to a large extent upon the funds on hand, services being metered and wastage reduced.

But then comes the excess on metered services, and where is the water collection clerk that does not dread water collection time and the vast number of complaints he

receives due to an excess over the minimum amount allowed?

In Manistee, in the third quarter of 1919, out of 1,300 metered services 650 showed an excess, and 12 per cent of the extra charges were due to leaks in fixtures, and ranged from \$4 to \$70 on $\frac{3}{8}$ -inch meters. Some of the causes of the excesses were leaky closets, leaky faucets, sill-cocks and garden hose not completely turned off.

When services are metered, these leaks are readily found, which is a good argument in favor of metered services, but in the case of unmetered service where a flat rate is

given, the problem of finding the leaks and having them repaired is more complex. To remedy this difficulty we have instituted systematic fixture inspections on all flat-rate consumers, and compulsory repairing of imperfect or leaky fixtures. Sufficient time has not yet elapsed to show what results have been attained, but it is safe to say that some good must come of it.

The circular reproduced is one of a number used to educate the public to the necessity of repairing leaks, no matter how small, and to do so promptly. The average consumer has no conception of the amount of water that will pass thru a small orifice in a certain length of time, and these charts are a revelation to most water users.

How Water is Wasted



Based on 40 lbs. pressure

This size stream from a $\frac{1}{2}$ inch opening will flow 180 cubic feet per hour or 1350 gallons per hour.
In one month 972,000 gallons
Cost of waste @ 13½¢ per 1000 gallons \$131.22.

This size stream from a $\frac{1}{4}$ inch opening will flow 50 cubic feet per hour or 375 gallons per hour.
In one month 270,000 gallons
Cost of waste @ 13½¢ per 1000 gallons \$36.45.

This size stream from a $\frac{1}{8}$ inch opening will flow 20 cubic feet per hour or 150 gallons per hour.
In one month 108,000 gallons
Cost of waste @ 13½¢ per 1000 gallons \$14.58.

This size stream from a $\frac{1}{16}$ inch opening will flow 4 cubic feet per hour or 30 gallons per hour.
In one month 21,600 gallons
Cost of waste @ 13½¢ per 1000 gallons \$2.92.

This size stream from a $\frac{1}{32}$ inch opening will flow 1 cubic foot per hour or 7½ gallons per hour.
In one month 5,400 gallons
Cost of waste @ 13½¢ per 1000 gallons \$0.73.

NOTE—Above amount multiplied by three will give cost of waste per quarter.

Issued by the Manistee Water Dept. for the enlightenment of consumers and to prevent waste. WATCH YOUR WATER SYSTEM for leaks and have them repaired. When you have an excess do not blame the Water Department. You may have a leak.

PART OF A CIRCULAR WHICH PROVED VERY HELPFUL IN
MINIMIZING WATER WASTE IN MANISTEE

Municipal and County Motor Trucks That Furnish Valuable Service



LA PORTE COUNTY, IND., OWNS AND OPERATES SEVEN OF THESE ACME TRUCKS



A SERVICE TRUCK IN ALL-YEAR WORK IN THE FULTON SPECIAL ROAD DISTRICT,
MISSOURI



A 3/4-TON GMC TRUCK IN USE BY THE FIRE DEPARTMENT, NORTH ANDOVER, MASS.

Municipalities are rapidly discovering the utility of the motor truck for the many and varied uses for which city officials need haulage units. They are finding that one motor truck will do the work of from three to five teams—and do it more speedily and economically. In hauling away the refuse of street, alley or sewer; in carrying sand, gravel and other materials for street repair or construction; in fact, in any of the many departments of city service work, the motor truck has found a permanent place, to the benefit of the city at large and the taxpayer in particular.



AN EFFECTIVE PIECE OF MACK FIRE APPARATUS IN SERVICE AT MECHANICSBURG, PA.

A New Field for the Development of Fire Prevention

Many Reasons Why Local Fire Insurance Agents Should Lend Their Aid to Fire Chiefs

By John G. Gamber

State Fire Marshal, Illinois

ANY new effort, or any extension in the scope of any work, must be justified by some outstanding need. This subject then divides itself into two parts: First, what is the need for development of new fields of fire prevention activities? Second, what are the fields which must be developed to meet that need?

What Do Fires Cost?

The writer has been paying considerable attention to the local fire problems of various Illinois cities, and has become impressed with the fact that the annual fire loss—great as it is and calling for every possible fire prevention effort—is but a small part of the cost of fires from a community economic standpoint. This fact has been brought out forcibly in the last few months, when some of our cities, because of the high cost of wages and commodities of every sort, have been obliged to curtail their fire-fighting forces and equipment in order to keep within their revenues.

The problems in Illinois are similar to those of cities in other states. Millions of dollars are invested in fire stations and equipment, in American cities. Millions more are expended annually for maintenance. If anything like the actual fire cost to American cities is to be determined, these items of investment and maintenance must be considered.

With the purpose of getting an idea of this cost to representative American cities, a letter was written recently to the fire chief of the largest city in each state, asking him to fill out a blank with the following data:

Amount of money invested in buildings,
ground and equipment
Total cost of maintenance in 1918
Total fire loss for 1918

The letter asked also for considerable detailed information along these lines. Practically complete information was se-

cured from 42 cities, while all but one of the remainder furnished partial information.

The figures were tabulated and, using estimates of population furnished by local chiefs, the cost of the investment, cost of maintenance and total fire loss were reduced to a per capita basis. By adding together these three per capita costs, a very good idea of what fires cost these cities last year was secured. Before reducing the cost of maintenance to the per capita basis, interest on the investment at 5 per cent was added, as this is properly an item of the annual cost of maintenance. No effort was made to figure depreciation, since replacements are made annually out of general taxation and show in the cost of upkeep.

The showings from a few of the larger cities are cited herewith. Let us take first the leading mid-western city, Chicago. Chief O'Connor estimated the population at 2,700,000. The Chicago Fire Department represents an investment of \$4,540,268, or \$1.68 per capita. It cost Chicago in 1918 for maintenance \$3,238,318. Add interest on the investment at 5 per cent, amounting to the neat little sum of \$227,013, and we have the real cost of maintenance—\$3,938,518, or \$1.45 per capita. Chicago's fire loss in 1918 was \$3,462,577, or \$1.28 per capita. By adding these three per capita costs together we find that fires cost Chicago in 1918 \$4.41 for every man, woman and child of its almost 3,000,000 population.

But Chicago's cost by comparison was very moderate. Take a Pacific Coast city, Seattle, Wash. Seattle has a population of 426,000. Here are the figures: total investment, \$1,460,332, per capita \$3.42; cost of maintenance in 1918 plus interest on investment, \$1,026,490, per capita \$2.40; fire loss in 1918, \$1,809,000, per capita \$4.24; total cost, \$10.06 per capita.

Take an example from the eastern sea-

board, Newark, N. J., with a population of 425,000. The investment was \$1,443,075, or a per capita of \$3.39; the cost of maintenance in 1918, plus interest on the investment, was \$1,284,210, or a per capita of \$3.02; the fire loss in 1918 was \$2,549,468, or a per capita of \$5.99, making the total per capita cost \$12.40.

Just one more example, this time from the South. Dallas, Tex., has a population of 130,000. Its investment is \$618,775, or a per capita of \$4.75. The cost of maintenance in 1918, plus interest on the investment, was \$340,938, or a per capita of \$2.62. The 1918 fire loss was \$750,468, or a per capita of \$5.77. The total per capita cost reached the figure of \$13.14.

Further illustrations need not be cited. The following summary gives a concrete idea of how expensive fires and fire protection are to most of our cities:

Of the 42 cities from which complete figures were obtained, all but one had a per capita cost of more than \$3 on the basis outlined above. In 38 cities the figure exceeds \$4; in 31 it was more than \$5; in 25 it was in excess of \$6; in 18 it was more than \$7. Fourteen cities paid a bill of more than \$8. In 11 the toll exceeded \$9; in 8 it was more than \$10; in 6 it was in excess of \$12; in 3 it was more than \$13; while in 1 the cost passed the \$14 mark. The only city with a per capita cost of less than \$3 was Albuquerque, N. Mex., which had the remarkably low figure of \$1.73. Memphis, Tenn., was at the other extreme with the exceptionally high figure of \$17.13.

It might be interesting in passing to note that the salaries of firemen alone amount to more than \$1 per capita in three-fourths of the cities in this list. It also should be borne in mind that the figures cited represent costs in 1918. Since then there have been increases of at least 35 to 50 per cent.

Add the Cost of Fire Insurance

It occurred to the writer that it might also be interesting to know, in connection with these figures, what fire protection is costing us from another angle—the insurance cost. Figures were obtained as to the aggregate premium collected by fire insurance companies in 1918 from the insurance departments of 36 states. These were reduced to a per capita basis by use of the latest population estimates of the Federal

Census Bureau for the various states. It was found that the cost of insurance protection last year ranged from \$2.18 per capita in New Mexico to \$13.38 in Rhode Island.

Let us consider the results of these two investigations in conjunction. Add to the per capita investment and maintenance cost of any city fire department the per capita insurance premium cost of the state in which that city is located, since it is the insurance premiums which pay the losses. This gives a very fair and forcible idea of what protection against fires and protection against losses are costing.

But, from whatever angle you look at the figures, the inference is the same: *the cost of having fires in American cities is altogether unreasonable and exorbitant.* The conclusion must inevitably be reached that there is a pressing need for development of new fields for fire prevention and that these fields are especially the opportunity and responsibility of local community forces.

The Responsibility of the Local Insurance Agent

There is a field which has been scarcely touched, a field with most fruitful possibilities for development—that which is occupied by the local agents of the insurance companies. Here are men particularly suited for this great work by the position they occupy and by their responsibility both to their companies and to the public. What a potent force they could be in every community!

Considering the local agent first from the viewpoint of his duty to his company, since that, of course, is his first duty: if he owes the company anything, it is to see that its interests are protected as fully as possible on every risk he writes. This takes in both the moral and the physical aspects of the risk.

Consider for a moment the moral risk. Over-insurance is the forerunner of the crime in the case of the professional arsonist, and the temptation to commit the crime in the case of the unscrupulous non-professional. If the over-insurance evil could be eliminated, fraudulent fires would be reduced to a minimum. No one is in such favorable position to check this evil as the local agent.

It would seem, then, to be the first duty

of the agent to see that values are as represented on every risk he is asked to write. He should inspect the risk as a matter of sound business practice. Through some sort of follow-up system, he should keep posted on his more important risks, so as to know whether the values are being kept up or are depreciating. Especially should he be on guard for the professional arsonist, who makes a showing of values on prosperity just long enough to secure a policy.

There are doubtless many good agents who make earnest efforts along this line, but too often we find that the sole aim of the agent seems to be to write as large a policy as possible in order to increase his commission on the premium, with the quality of the risk his second consideration. This, of course, is playing right into the hands of the crook. And, worse still, it sometimes happens that it is the local agent who makes the loudest protest when payment of a claim is held up, pending investigation by the Fire Marshal, doubtless because his obsession regarding prompt settlements for advertising purposes overcomes his sense of discrimination.

If it is important to inspect risks as to values, it is doubly important to inspect them as to physical condition. The loss due to incendiary fires, while large, is but a small percentage of the total fire loss. Probably 90 per cent of the total fire loss is due to natural causes, and a large part of it is directly attributable to physical hazards which should not exist.

The writer believes it the duty of every agent to reject every risk where flagrant hazardous conditions are found, withholding the policy until conditions are remedied. He should penalize every special hazard with the extra charge, where the extra charge is provided, and not wink at these special hazards, as some agents are inclined to do.

The agent should keep in mind also the need of reinspection when policies are renewed and, in certain cases, at other times. Take the case of buildings which once were ideal residence properties but which, through industrial or social transitions in the districts in which they are located, have become deteriorated and in many cases vacant and the rendezvous of tramps. They are the worst sort of hazards and are continually the scene of fires. In many cases

investigations reveal that insurance is in force for the full original amounts. It is needless to say that with this temptation always before a property owner who has permanently depreciated values on his hands, not all these fires are accidental. If the agent had kept fully informed as to these risks and had taken the proper action, the policies would have been canceled long since. But in too many instances he has not only failed to do this, but has actually written new policies on buildings which are scarcely more than shacks and which no company would carry if apprised of true conditions.

Finally, because he is in the insurance business, the agent has a duty to the public, since it is the public which pays the premiums which sustain the losses. He should find out whether their local building codes and electric wiring ordinances are as effective as they should be, whether there are ordinances requiring the removal of rubbish and débris, and whether the ordinances are being lived up to. If the ordinances are not adequate or are not being complied with, he should strive to have them made adequate and enforced. He should be the leader in fire prevention and clean-up day campaigns in his community, working constantly for the education of the people along more advanced lines of fire prevention and protection.

The Chamber of Commerce an Effective Ally

Organized effort, of course, is necessary to accomplish much along these lines. In the larger communities the organization machinery is already at hand in the chamber of commerce. Made up of the most substantial and influential interests of the city and dedicated to the advancement of the civic welfare, it is the most potent force in any community. If its governing board is apprised of the need for fire prevention activities, what they will mean to the city, and how to go about getting practical results, an effective program will be in operation in short order.

The progressive local insurance agent is always identified with his chamber of commerce. His advice would be heeded and his leadership accepted as in the case of other interests which are alive to the opportunity of advancement through community effort.

News and Ideas for Commercial and Civic Organizations

New Membership-Getting Plan Stimulates Civic Spirit

PONTIAC, MICH.—A brand-new method of securing members has been discovered by the Pontiac Board of Commerce. What is called the "In and Out" Club, composed of but five members, has been formed for the purpose of getting members for the Board of Commerce. The personnel of the Club is constantly changing because the individual ceases to be a member as soon as he has secured his new member. "Get Kicked Out" is the Club slogan.

There is a strict ruling which provides that "if any member of the Club fails to secure one new member for the Board in a month, he must get two the following month, and three the third month, and so on, until he has filled the requirements." There can be no loafing on the job, therefore. The man who does not get his member inside of a month is to be pitied; there are too many who will censure him for his lack of civic spirit to permit such a thing to happen. The member who has earned the right to be dismissed from the "In and Out" Club becomes automatically a member of the "Live Wires" Club, an organization which so far is purely honorary. Its members are provided with a "Live Wire" badge.

The rapidity with which things have been moving in the "In and Out" Club is shown by the fact that Frank Anderson, the original captain of the club, was in it just six hours. He had secured his first member before evening. The Club rules provide that each member appoint his successor. Mr. Anderson appointed G. S. Shaffner to solicit one member. In twenty hours Shaffner had his new member. Mayor Ely was a member of the Club but three seconds, and holds the record. The fact that twenty-four new members were secured during April indicates that the new club idea is worth trying.

The "In and Out" Club replaces the old-

style membership committee appointed each year for the purpose of securing new members. The "In and Out" Club was created in Pontiac to do the work in a better way than had been done by the standing membership committee.

C. W. OTTO,
Managing Director, Pontiac Board of Commerce.

"Colonized" Luncheon and Forum Meetings

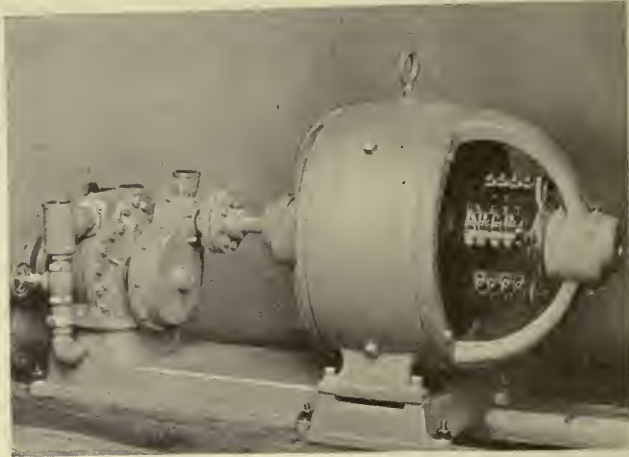
BILLINGS, MONT.—The Billings Commercial Club has discovered a way of stimulating interest in the weekly forum luncheons held in the Club's dining-room. The new method is working out very satisfactorily to the House Committee with which it originated.

The Club's membership is made up largely of business and professional men who came from eastern and southern states a comparatively few years ago, for Billings has grown from a frontier town of a few inhabitants in 1882 to a modern city of approximately 20,000 people. The members have been "colonized," that is, grouped together according to the states from which they came, and each colony divides the honors in planning the forum program, and even the menu each week. The men in the Missouri colony advertised themselves as from the "Show Me" state, and asked the question, "Why Billings?" Five-minute talks presenting the city's advantages and disadvantages were given, many of which contained really valuable ideas and suggestions. The Missourians arranged with the Club caterer to make corn bread and sweet potatoes the principal features of the menu.

Other "colonies" have handled the forum and luncheon meetings with equal success. The idea has been "sold" to Billings and the membership. The local papers have given it much good publicity and encouragement.

FRED T. LINCOLN,
Secretary-Manager, Billings Commercial Club.

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¶ There are over three hundred Users of Northern Rotary Pumps who will testify to this fact.

¶ The Northern Rotary Pump can be furnished to fit any truck for fire service—on hand drawn trucks as electrically or gasoline driven units—as stationary units with electric or gasoline motors for fire or water works service.

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MINNEAPOLIS, MINNESOTA

MANUFACTURERS OF THE NORTHERN TRAILERPUMP FOR FIRE SERVICE

Million-Dollar Civic Fund Raised by Middletown Chamber

MIDDLETOWN, OHIO.—On the evening of March 31 the campaign which the Middletown Chamber of Commerce had been promoting to raise \$1,000,000 for civic improvements closed with a total subscription of \$1,030,000 and 9,000 contributors. This accomplishment is believed to be unprecedented in a city of 25,000 people. It indicates a per capita contribution of \$40, and estimating that there are 5,000 homes in Middletown, it means an average of \$200 contributed by each home.

The improvements for which this civic fund makes provision are:

1. Additions to the Middletown Hospital
2. Financial assistance to the Board of Education for increased pay for its teachers
3. An extension of the present system of parks and playgrounds
4. More commodious quarters for the Girls' Club
5. Financial assistance to the Public Library
6. The erection of a Community Memorial Building, to be dedicated to the soldiers, sailors and marines who served in the World War
7. Headquarters in the Community Memorial Building for the local post of The American Legion
8. A new Y. M. C. A. building
9. Financial assistance to the City Commission, pending the proposed remedial legislation affecting taxation
10. Financial assistance from time to time for other community development activities which shall be designated by the Civic Fund Campaign Executive Committee

The greater portion of this fund was raised by the pledge system. Two forms of pledge cards were issued, one a salmon-colored card, which was distributed in large quantities at the manufacturing establishments and other places where large numbers of people were employed, and the other, a smaller white card, used elsewhere. The ten subjects for which the Civic Fund was created were given on both cards. The individual pledged to pay into the fund a certain amount weekly, semi-monthly, or monthly. An illustrated booklet entitled "Men Are Square," outlining the plan for community helpfulness, was issued, together with a leaflet containing the answers to questions that were likely to be asked regarding the fund. And there were buttons and badges, and posters for the windows

and for wind-shields on automobiles. All bore the same design, which is reproduced below.



LOOKING TOWARD THE DAWN OF A BETTER DAY FOR MIDDLETOWN

The various aims and ideals of the Greater Middletown Plan were largely developed by George M. Verity, president of the American Rolling Mills Company, who is chairman of the Civic Fund Executive Committee of seventeen members. The Secretary-Manager of the Chamber of Commerce was campaign manager. The Civic Fund Campaign Committees had over ninety members, and each industrial establishment had its own campaign organization and chairman. There was also a Woman's Team Organization, which was organized by wards, each with its chairman. The soliciting teams were composed of 500 workers.

While raising a million dollars is considered a worth-while achievement, the sponsors of the plan consider that of secondary importance to the spirit of co-operation which the campaign has produced in the community. It is impossible to overestimate the high quality of the spirit now existing in this city. It has inspired the people with such faith in the community's ability to rise to the occasion that the Chamber feels that it can safely undertake any sound program of civic development, however ambitious it may be.

DWIGHT E. SMITH,
Secretary-Manager, Middletown Chamber of Commerce.

Otterson Auto-Eductor Cleans Catch Basins Saves Time-Money-Labor



The Otterson Auto-Eductors are saving thousands of dollars yearly to the following cities now using them:—

Seattle, Wash., 1 machine
Portland, Ore., 1 machine
San Francisco, Cal., 1 machine
Chicago, Ill., 1 machine
Chicago, Ill., repeat order, 6 machines
Chicago Park Board, 1 machine
Milwaukee, Wis., 2 machines
Milwaukee, Wis., repeat order, 2 machines
Indianapolis, Ind., 1 machine
Indianapolis, Ind., repeat order, 1 machine
Louisville, Ky., 1 machine
Louisville, Ky., repeat order, 1 machine

Akron, Ohio, 1 machine
Albany, N. Y., 1 machine
Brooklyn, N. Y., 1 machine
New Bedford, Mass., 1 machine
Providence, R. I., 1 machine
Providence, R. I., repeat order, 1 machine
Richmond, Va., 1 machine
Bridgeport, Conn., 1 machine
Halifax, N. S., 1 machine
U. S. Army Camps:
Camp Meade
Camp Gordon
Camp Lee
Honolulu, H. I.

Efficient, economical and sanitary in operation. Cleans catch basins in from four to twenty minutes:

**Equipment mounted on any 5-TON
Chassis of suitable standard make.**

THE OTTERSON AUTO-EDUCTOR CO.

817 FAIRBANKS BLDG.

SPRINGFIELD, OHIO.

Inadequate Municipal Revenue Presents Serious Problem

NEW CASTLE, PA.—Municipalities generally throughout the United States are seriously embarrassed at the present time by an insufficiency of revenue. This is due to the sudden increase in operating expenses, which, in turn, is due to the rise in the cost of materials and the price of labor. The deficiency prevails in both city and school districts, with the result that municipalities have been obliged to curtail or postpone necessary public improvements. The educational systems, too, have been seriously handicapped from lack of funds.

New Castle is no exception to the rule, and the Board of Trade is endeavoring to meet the situation here through its Committee on Taxation. This committee evolved a plan for assessing all the real estate of New Castle for its "fair sale value." The recommendation had the approval of the directors of the Board of Trade and has been adopted by the city government. The new assessment is being made upon the basis of a 100 per cent valuation. This will go a long way toward accomplishing an equalization in assessment upon an equitable basis, and will immediately increase the realty valuations in New Castle from \$27,000,000 to approximately \$50,000,000 or \$60,000,000. The millage will be reduced, but the higher valuation will enable the city to levy an assessment that will produce operating revenues sufficient to meet its requirements, and at the same time provide a basis of credit for additional municipal bonds as they may be required for improvement projects.

The recently published report of the United States Bureau of the Census entitled "Financial Statistics of Cities," covering the year 1918, shows that 60 of the 96 cities in group No. 5 whose populations range from 30,000 to 50,000 report deficits in their municipal revenues. In group No. 4, made up of cities having populations of 50,000 to 100,000, 43 cities out of a total of 62 report municipal deficits; while in groups Nos. 1, 2, and 3, including all cities having populations in excess of 100,000, 43 cities out of the 69 were obliged to spend more for operations than was received from all sources, including taxes, special assessments, fines, earnings of general departments, rents, privileges, interest and

earnings of publicly-owned utilities. In other words, 147 of these 227 American cities have been obliged to spend more for operations than they have received from taxation and other sources of revenue.

This condition is one that calls for action by commercial bodies, as the taxing officers are usually reluctant to increase the public burden unless assured that they will be sustained by public sentiment. Likewise, the taxpayers are slow to take the initiative when the question of increasing taxes is presented. In many instances such movements have met with very determined opposition, and, at best, it is a slow and cumbersome proceeding to revise a system of valuations.

The fundamental requisite in any program of municipal improvements is provision for revenues. An adequate system for the assessment of property for taxation should insure not only a sufficient income for operations, but the standard of valuations should be so established as to provide a legal basis of credit for the issue of bonds that may be required to finance improvement projects.

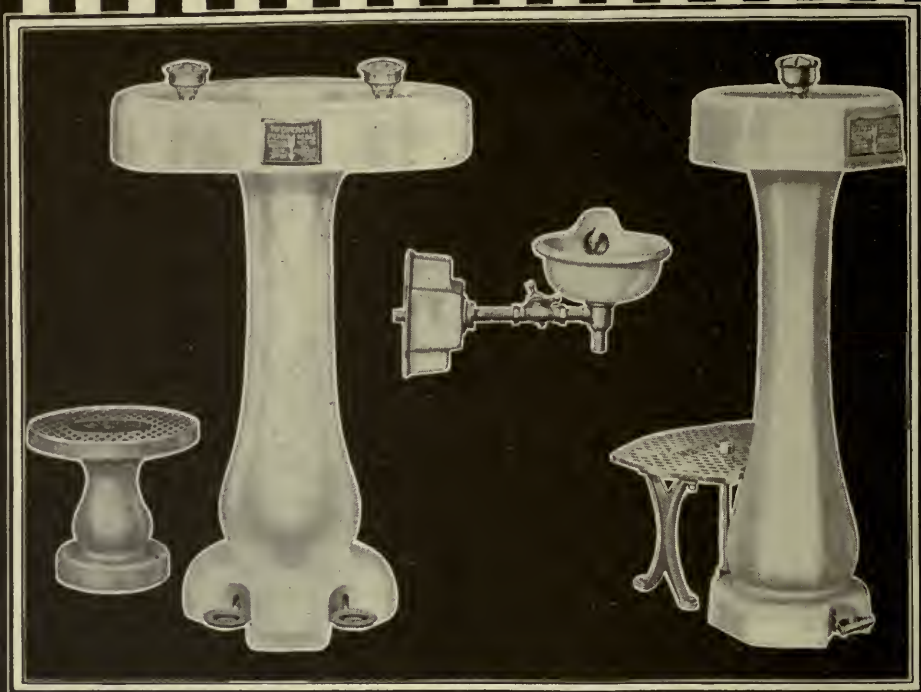
An examination of the programs of work of a considerable number of representative chambers of commerce shows that a very large percentage of the projects in which these organizations are interested come within the class of improvements at the expense of the city and the county. Does it not follow, then, that the outstanding project of importance in many of our chambers of commerce is to deal promptly and effectively with the question of taxation?

JOSEPH W. KENNEY,
Commissioner, New Castle Board of Trade.

Lake Michigan Made Accessible to Manisteeans

MANISTEE, MICH.—The map shows that Manistee is located on the eastern shore of Lake Michigan. The lake shore is the city's western boundary. From their residence or office windows, hundreds of residents can see the waters of the lake rolling majestically, but until the Board of Commerce took hold of the matter recently, Manistee had no access to the lake except a narrow cinder roadway running along the north side of the Manistee River to the Coast Guard Station.

The entire short line in the vicinity of Manistee consists of a series of most pic-



MUELLER Sanitary Drinking Fountains

There is a *MUELLER* model to meet every need. The three designs here shown—E-3650, E-3758 and E-3632—are all popular styles for parks and public buildings.

Each *MUELLER* Fountain combines the most approved sanitary construction with beauty of design and quality of materials and manufacture. We are equipped to supply special fountains for unusual conditions.

Write for full information and prices.
Mail orders given prompt attention.

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turesque dunes, overgrown with evergreens and hardwoods and native shrubs. The beach is ideal for bathing. Years ago a railroad purchased all the lake front for terminal facilities and yard room. The yards were never put in, and the dune country has been preserved in all its pristine beauty.

Believing that the people of Manistee should have access to the lake on the south side of the Manistee River, where most of the city lies, the Board of Commerce took the matter up with the owners of the railroad property and, after negotiation, secured title to a 66-foot street to run three-fourths of a mile to the lake. The matter was next taken up with the City Commission, with the result that the city has put in a permanent asphalt pavement to the lake.

A large resort development is now being projected and has reached a definite stage. It is expected that within two years property now listed on the tax rolls at a nominal value will be paying the city in taxes more than 25 per cent annually of the cost of the improvements to be made, and the people of this city will have the inestimable boon of being able to reach the great lake that rolls at their doors.

J. C. BEUKEMA,
Secretary, Manistee Board of Commerce.

A Road and Travel Bureau

MADISON, WIS.—The Road and Travel Bureau of the Madison Association of Commerce was instituted two years ago to serve not only the many tourists who come to the city, but the citizens themselves who desired to take trips to various parts of the country. Maps and other data were secured from state highway commissions, showing the main routes through the various states, as well as many of the provinces of Canada. Maps of cities and the great transcontinental routes were likewise obtained, as well as information concerning boats and ferries and free camp sites, so that to-day the Bureau can route a tourist to almost any point in the United States or Canada.

Information and literature concerning summer resorts throughout Wisconsin, hotels and points of interest is likewise kept on hand. Literature is also available concerning the great resorts throughout the

country, including the national parks.

Last summer Madison placed at the disposal of tourists the first civic camp site east of the Mississippi—Monona Park. This municipal park offers unusual inducements to tourists to camp there because of its location about three miles from the city, its beautiful trees, and grassy slopes, and the boating and swimming afforded by Lake Monona, which borders it. A caretaker employed by the city to look after the grounds resides in the park, and tourists may have their mail directed to the park in his care. A quarter of a mile away are stores at which supplies may be obtained. Sign posts are located at each entrance to the city telling the tourist of this civic camp site, where he may enjoy an out-of-doors vacation with ample facilities for comfort.

For the convenience of those who have only a short time to stay in the city, an auto tour through Madison has been laid out. For the traveler who wishes to make Madison his headquarters for a few days or weeks, the Road and Travel Bureau will plan side trips to the lakes and resorts in southern Wisconsin. For those who do not wish to avail themselves of the privileges of the out-of-door camping, the Association of Commerce lists summer cottages on the lakes which may be rented for very reasonable sums.

That the Road and Travel Bureau is a useful department of a commercial organization is shown by the fact that during the tourist season of 1919 the Madison Bureau received from 30 to 50 calls daily for routes and other information. The work is increasing each year because of the personal advertising done by those who have availed themselves of its services in the past.

J. C. BITTERMAN,
Director, Road and Travel Bureau.

Successful County Hospital Campaign

HARTFORD CITY, IND.—A county hospital has long been needed in Blackford County, but no concerted effort was made to secure it until the Chamber of Commerce, organized only last year, got behind the movement. A campaign was launched early in 1920, and at the special election held on March 9 for the purpose of deciding the question, the project was carried by a majority of 790 votes. The amount to be ex-

BEFORE USING TARVIA

Photograph shows wretched condition of Fourth Avenue, Milwaukee, Wis., before it was salvaged with "Tarvia-X."

AFTER USING TARVIA

The same street, showing how the "Tarvia-X" resurfacing has made it smooth, mudless, dustless and traffic-proof.

To Get Good Roads—Cheaply—Quickly —Save the Roads You Have!

MILES and miles of good gravel and macadam roads throughout the country can be restored to meet modern traffic requirements. The way to do this is to utilize the existing road as a foundation for a traffic-proof Tarvia top. And where crushed stone or slag is available, the community so favored not only can save its roads but *save* considerable money in the bargain.

Many progressive communities recognize this fact and are carrying out an extended *road salvage program*, rather than build new roads at present exorbitant prices.

For example, the City of Milwaukee has in

this way transformed 1,700,000 square yards of water-bound macadam into splendid modern streets to the complete satisfaction of both the city authorities and the traveling public.

Whether you require a good binder for new construction, a dust-preventive, a patching or maintenance material, Tarvia, in its various grades, provides an economical and satisfactory solution.

Tarvia Roads are durable, dustless and mudless. They are also waterproof and frost-proof and require a minimum of upkeep expense.

Illustrated Booklet, telling about the various Tarvia treatments, free on request.

Tarvia

Preserves Roads—Prevents Dust

Special Service Department

In order to bring the facts before taxpayers as well as road authorities, The Barrett Company has organized a Special Service Department which keeps up to the minute on all road problems. If you will write to the nearest office regarding road conditions or problems in your vicinity, the matter will have the prompt attention of experienced engineers. This service is free for the asking.

If you want *better roads and lower taxes*, this Department can greatly assist you. Booklet free on request.

THE BARRETT COMPANY, (United)

Montreal

Toronto

The *Barrett* Company

Winnipeg

Vancouver

Boston
New Orleans
Syracuse
Bangor
Elizabeth

St. Louis
Birmingham
Seattle
Washington
Buffalo
Halifax, N.S.

Cleveland
Kansas City
Peoria
Johnstown
Baltimore
Sydney, N.S.

pended is not to exceed \$80,000. The victory was not won without a hard struggle. In fact, some of the most prominent citizens said it could not be done. Many difficulties had to be overcome, chief of which was the objection to the additional tax necessary in order to finance the construction and equipment of the hospital.

The Chamber appointed a hospital committee, which drew up a petition, had it signed by the necessary number of freeholders, and presented it to the Board of County Commissioners, who ordered the special election. The services of a publicity man were secured, and he devoted his entire time to the project until the day after the election. An election organization was formed the same as for a regular political election, with precinct chairmen, etc.

Meetings were held each evening in the various precincts, at which four-minute speakers were used to create favorable sentiment, and the Chamber had representatives at the meetings held by other organizations in behalf of the hospital project. In fact, the Chamber of Commerce was everywhere. It obtained the support of the newspapers, which donated advertising space freely. Inspiring editorials were used, and the inhabitants of the county were flooded with circular letters, until everybody was discussing the hospital project. Care was taken to explain how much an individual would be taxed on the value of his holdings, so that he could figure up what the county hospital would cost him personally.

The election cost the county only \$99. The Chamber raised a special fund with which to defray the expense of holding it, and the inspectors and clerks served without pay in the majority of the voting places on election day.

When the day finally arrived, the Chamber had fifty automobiles on hand to carry the voters to the polls. Arrangements were made with the manufacturers to permit their employees to be hauled to their voting places at specified times of the day. Nearly every automobile in town had a poster on the wind-shield reading, "Vote YES for the County Hospital," or "We Want a County Hospital," or "The County Hospital is Coming Sure."

P. H. HAWTHORNE,
Secretary, Hartford City Chamber of Commerce.

How the Trenton Chamber of Commerce Builds Retail Trade

TRENTON, N. J.—The Chamber of Commerce of Trenton, through its Retail Merchants' Division, maintains a continuous drive to promote buying in Trenton and to extend its suburban retail trade. Located about midway between New York and Philadelphia, with two steam railroads and an interurban line to each city, also a boat line to Philadelphia, Trenton formerly felt keenly the competition of the big metropolitan stores, but this is being largely overcome by the aggressive work of the Retail Merchants' Division.

Each spring and fall the Division conducts style shows and expositions of all lines of merchandise, marked each time by new and attractive features. Supplementing these, special retail trade events are held on an average of once a month, such as Suburban Day, Dollars Day, Profit-Sharing Day, Free Mileage Day, etc. The last-named is an annual event, when round-trip fare at the rate of three cents a mile is rebated to every suburbanite whose collective purchases amount to \$5 or more, these fares being prorated among the participating merchants.

The Chamber of Commerce has built up a mailing list of 4,000 families in the surrounding towns and rural sections, and a handsomely printed notice of each event is mailed to each of them. During the week preceding each event the Chamber has strong advertisements in ten weekly newspapers in suburban towns. These advertisements are usually three columns wide and ten inches deep. Live publicity campaigns are conducted in the Trenton newspapers each time. Splendid coöperation is given by the Trenton merchants in special

bargains, window displays and individual advertising. The Chamber of Commerce emblem of a circle enclosing the Trenton pennant, reproduced herewith, and the inscription "Retail Merchants' Division"



is made prominent in all the publicity. Also, for each special event a suitable cut is designed and furnished by the Chamber to all merchants who desire to



He little thought that before the night was over, fate would cast dice for this infant's life—would it be three hours or three score years and ten?

Fate — and a Baby's life

"PRETTY fine boy, isn't he, Nurse?" said the proud young father. "Tomorrow you're going to let me hold him for a moment."

It was a load off his mind to know the two for whom he cared for so deeply were in a hospital where they would be well taken care of. No fear that anything would go wrong, doctors within call, a nurse always on duty. Could anything more be asked?

Midnight—an alarm of fire—hours of heart-rending and nerve-racking work by heroic nurses, doctors and firemen.

Another day. The little baby was safe, thanks to the nurse who thought more of its safety than she did of her own. The young mother lay at the point of death, her fight for life doubled by exposure and cold.

Safe? Why had the father and the deluded public thought that hospital safe?

It was the best equipped, best protected in

the city. But in spite of fire escapes, fire hose, and every seeming precaution the demon had done his work. Ten persons had been sacrificed.

You — what are you doing to make the lives of the patients in your hospital safe? Have you installed in your building that watchman who never sleeps, the Grinnell Automatic Sprinkler System? No other protection is fool-proof and failure-proof. No bungling nor palsied fingers manipulate it. It is constant—automatic. When the fire starts, the water starts.

The watchword of the new age is Service. What better way can you serve than by seeing that a Grinnell Automatic Sprinkler system is installed in the hospitals, schools and institutions of your community?

Read—"Fire Tragedies and Their Remedy"

This instructive booklet will wake you up to the penalty paid by those who have neglected to provide adequate fire protection. A penny for a postal is a small price to pay for human lives. Write for it now. Address the Grinnell Company, Inc., 283 West Exchange Street, Providence, R. I.

GRINNELL

Executive Offices



COMPANY

Providence, R. I.

Complete Engineering and Construction Service on Automatic Sprinklers.
Industrial Piping, Heating and Power Equipments. Fittings, Pipe, Valves.

GRINNELL AUTOMATIC SPRINKLER SYSTEM—When the fire starts, the water starts.

use it in their advertising.

Each trade event is managed by a special committee appointed for the purpose by the Division chairman. The Committee is discharged when its work is completed. The general Division activities are managed by an Executive Committee selected annually and composed of the chairmen elected by the various retail lines represented in the Division. This Executive Committee selects a new chairman quarterly, and this has es-

BUY IN TRENTON.

Possibly you have Been In The habit of shopping out of town. But I Trust you will Begin In Trenton and Break In Thoroughly and Be Inspired To—"Buy In Trenton," thereby booming Business In Trenton and making prospects Brighter In Town.

You can get the Best In Trenton, and do Better In Trenton, and you can help promote Business Interest Through cooperation with Trenton merchants.

You have all Been Invited To the style show, which has Been Introduced Through the papers. Be It True, let everyone do their B. I. T. toward making Trenton greater for business and prosperity.

HARRY C. SANDHOFF,
118 Harding Street, Trenton, N. J.

THE ARTICLE THAT WON FIRST PRIZE IN THE "B. I. T." CONTEST CONDUCTED IN THE CITY OF TRENTON

established keen rivalry among the respective chairmen, who aim to make each new administration more successful than the last. The Division was created by resolution of the Board of Directors and functions as a large committee rather than as an organization. There are no by-laws, and its informal character obviates the danger of its becoming an independent body. The members of the Division must first become members of the Chamber. The headquarters are in the offices of the Chamber of Commerce, and Managing Secretary Harry D. Conover acts as secretary of the Division.

All the larger stores of the city have plural memberships with the Chamber, the unit being \$25 a year. The Division is financed from a budget fixed by the Board of Directors of the Chamber. The general promotion expenses, such as the suburban advertising, printing invitations to suburb-

BUY IN TRENTON.

"Buy In Trenton" is the meaning of the letters "B. I. T."

This slogan signifies the culmination of the efforts of the enterprising and progressive merchants of Trenton to give to their patrons the most exclusive and yet the most practical and economical merchandise at the most advantageous prices.

BUY IN TRENTON!

MILDRED E. KACHLINE,
Lambertville, N. J.

THE ARTICLE THAT WON FIRST PRIZE IN THE "B. I. T." CONTEST CONDUCTED FOR THE SUBURBS OF TRENTON

anites, window posters, postage, prizes, cuts, etc., are borne by the Chamber of Commerce from the budget of the Division. The Division functions under the Commercial Bureau, of which it is a part, and its bills are audited by the Commercial Bureau Executive Committee before being passed to the Board for payment.

The special trade events being held this year are all emphasizing strongly the Buy in Trenton campaign. This drive was introduced by a Buy in Trenton Day, one of the features of which was an aggressive newspaper guessing contest on the letters "B. I. T.," for which cash prizes were offered by the Chamber. Through the energetic efforts of the Division, the retail trade of Trenton has been built up and extended in a marked degree.

HARRY D. CONOVER,
Secretary, Trenton Chamber of Commerce.

\$5,000,000 Hotel Financed by Providence Chamber of Commerce

PROVIDENCE, R. I.—A special committee of the Providence Chamber of Commerce has just completed the financing of the Providence Biltmore Hotel, a \$5,000,000, 19-story structure to be erected in Providence on the site bounded by Washington, Eddy, Worcester and Dorrance Streets. Building operations will begin July 1.

The Chamber of Commerce made an effort to provide Providence with a large modern hotel before the United States entered the European war. The movement was getting nicely started when the prices of material began to soar, and it was con-

THE AMERICAN CITY

FASHIONS CHANGE

but —



CULVERTS SHOULD BE PERMANENT

FASHIONS and styles have changed many, many times since the first Newport Culvert was laid.

Newport Culverts are good for a long period of years. There is no particular pleasure in ripping up your roads every few years to replace defective culverts. Next time buy Newport Culverts and save all this unnecessary work, annoyance and expense.

Made from genuine open hearth iron. Government tests prove them 99.875% pure iron copper alloy. Absolutely rust-resisting. Their lasting qualities are an assured fact. Serviceable for every service. The half-round culvert is ideal for city service. Used by municipalities all over the country.

*Send us your address and we will tell you
how better culverts mean better roads.*

NEWPORT CULVERT CO.

542 WEST 10th STREET

NEWPORT



KENTUCKY

sidered unwise to make further attempts at that time. A few months after the signing of the armistice, the demand for hotel accommodations became so great that the Chamber made another effort to get the project under way, and appointed a special committee to launch the undertaking. This committee, with Arthur L. Aldred as its chairman, secured an option on the desired site and perfected an agreement with successful hotel operators in New York City to build and operate the hotel. In order to hold the property on which it was desired to erect the hotel, it was necessary to induce ten enterprising citizens to advance \$30,000 each to cover the first payment on the purchase price. The committee then negotiated a loan of \$1,900,000 with the Metropolitan Life Insurance Company on the land and building of the proposed corporation. The hotel operators will pay the cost of equipping and furnishing the building, nearly \$1,000,000, taking second preferred stock in payment therefor.

After the above negotiations had been perfected, the Chamber offered to the people of Providence \$2,500,000 worth of first preferred 7 per cent cumulative stock (25,000 shares), knowing that it was a perfectly safe investment, and realizing that it was necessary to take care of the first preferred obligations in order that the operators might even secure the interest on the large sum invested by them.

The campaign to sell the stock was conducted by the Chamber's campaign committee. The majority of it was sold by means of the usual team organization work. Approximately \$2,100,000 worth was sold to



THE NEW HOTEL TO BE ERECTED IN PROVIDENCE, FINANCED THROUGH THE EFFORT OF THE PROVIDENCE CHAMBER OF COMMERCE

the members of the Chamber of Commerce and other citizens of Greater Providence. When the sales began to lag, the committee succeeded in inducing the hotel operators to take the stock remaining unsold.

Great credit is due to the Town Criers of Rhode Island for the part they played in advertising the campaign. The Chamber had the active coöperation of the Rotary Club and the Kiwanis Club in the sale of the stock. The local press donated a great deal of space to advertising the project, in addition to the space paid for.

Copies of the printed matter used in this undertaking can be had upon application to the Secretary.

CLARENCE A. COTTON,
General Secretary, Providence Chamber of
Commerce.

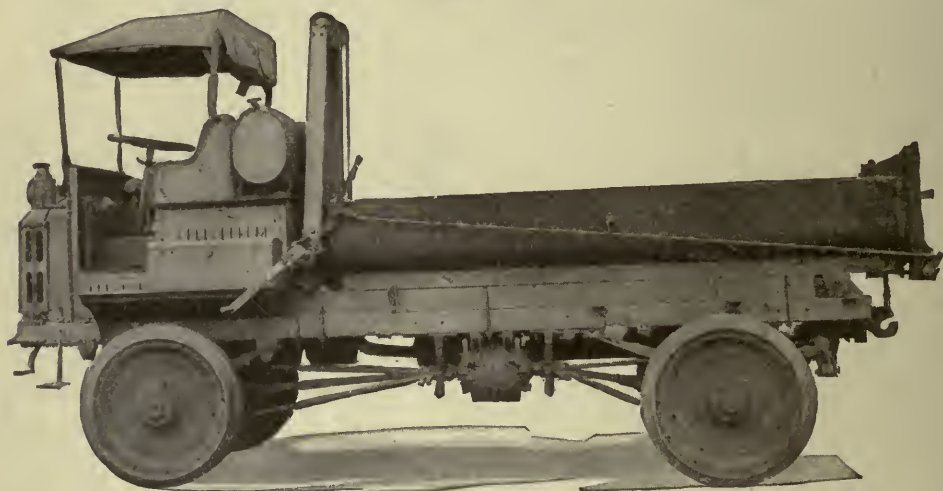
Stop Burning Up Homes

The housing problem is one of the great issues of the day. All unnecessary construction was forbidden during the war, and now that the restrictions have been withdrawn industrial troubles and the high prices of materials and labor have tended to reduce the amount of building. In many industrial centers newcomers are unable to get houses to live in, rents have gone up, and the situation has become so serious that state and municipal commissions are seeking a solution.

Why not stop burning up the existing buildings, if there are not enough to go around and more cannot be built under existing conditions? Thousands of homes are burned each month, most of them through carelessness. If housing is so important, if homes are so hard to find, why not be careful with those that we have? Apply fire prevention methods. Be careful about matches, smoking, lighting and heating apparatus and gasoline. Clear out the rubbish, inspect the flues, watch the shingle roofs. Conservation is the order of the day, and if the shortage of dwellings will cause householders to be careful about the fire hazards of their homes, one criminal cause of that shortage will be greatly reduced.



TRADE MARK



A Columbian Lightning Hoist and Dump Body mounted on one of the Government FWD trucks. The Indiana State Highway Commission has 65 trucks with this equipment.

Performance Counts In Road Building!

That is why the

Columbian Lightning Hand Hoist

is so often specified when purchasing road equipment. Its record of successful performance in the past assures you of its ability to serve you satisfactorily and economically in the future. No matter what kind of a truck you are using, the COLUMBIAN LIGHTNING HOIST in connection with a Columbian Steel Dump Body will increase the efficiency of your road building equipment by its speed, capacity, and ease of operation.

The COLUMBIAN LIGHTNING HOIST is based on mechanical principles so simple that there is practically no chance for it to get out of order, yet so sound that one man can easily dump a 5-ton load. While it has been built with the idea of quality rather than price, yet the first cost is so reasonable that this, together with the absence of maintenance costs, makes the Columbian Hoist a most satisfactory purchase from the standpoint of economy.



Patented

Write us today for our illustrated circular No. 97 and learn how Columbian Dumping Equipment can serve you.

COLUMBIAN STEEL TANK CO.

"TANKS FOR THE WORLD"

1519-1625 WEST 12th STREET

"ESTABLISHED IN 1894"

KANSAS CITY, MISSOURI.

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing
Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Regulating Use of Streets

An ordinance forbidding soliciting of business on a street or public sidewalk must be general in its operation in order to be valid, holds the Missouri Supreme Court in the recent case of *Lerner*, 218 Southwestern Reporter, 331. The decision annuls an ordinance of the city of St. Louis containing the following quoted provision:

"Any person who shall accost another person on a street or sidewalk in front of any store, house or place of business in the city of St. Louis, and solicit such other person to purchase any goods, wares or merchandise of a like nature as those kept for sale within said store, house or place of business at another store, house, or place of business, or shall solicit such other person to enter such other store, house or place of business, for the purpose of examining or purchasing similar goods, wares, or merchandise, shall be deemed guilty of a misdemeanor, etc."

The Supreme Court concludes that the city possessed ample authority "by legislative enactment not only to establish and improve its streets but to prescribe the terms and conditions upon which they may be used."

The court's ground of objection to the ordinance appears in the following excerpt from the opinion:

"Without reference in detail to the requisites of a valid criminal statute, it will suffice to say that an ordinance, to conform to same, must be general in its terms and uniform in its application to the class of persons or subjects to be affected. If the ordinance, therefore, seeks to regulate citizens in the otherwise lawful use of their property or the conduct of their business, the rules and conditions therein required to be observed must be so specified that all of the citizens may alike be required to comply with same; and no opportunity must be afforded by the terms of the ordinance for the exercise of discrimination between citizens so complying. An analysis of the ordinance will enable it to be determined whether it possesses the infirmity indicated. Instead of prohibiting the general personal

solicitation of persons for business purposes upon the streets and sidewalks of the city, its application is limited to the prohibition of such solicitations to persons in like lines of trade in front of the store or place of business of a competitor. Such a classification is neither general in its terms as to the persons to whom it is intended to apply, or to the streets the use of which is attempted to be regulated.

"Certainly, if it be an ill requiring legislative supervision to regulate the solicitation of business upon the streets and highways within the limits prescribed in the ordinance, then it must follow that it is equally an ill to solicit business elsewhere upon any of the thoroughfares of commercial activity in the city. The ordinance therefore cannot be otherwise construed than as special in its terms and local in its application, contravening the constitutional provision that 'where a general law can be made applicable, no local or special law shall be enacted' (section 53, clause 32, art. 4, Const. Mo.), which salutary rule regulating legislation we have shown applies with equal force to an ordinance as well as a state law."

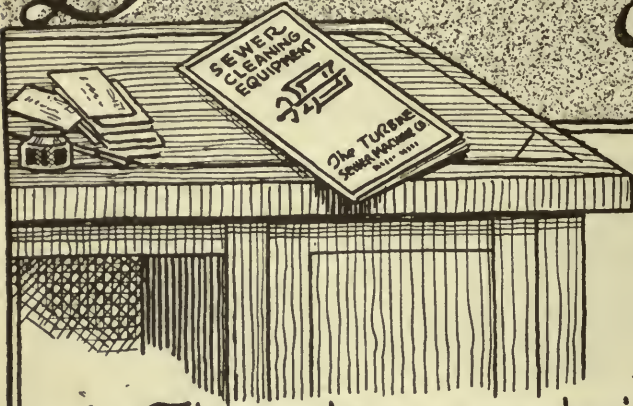
Establishing Alley Grades

Where the authorities of a city have not established the grade of an alley, it will not be inferred, as a matter of law, that the grade is to be on a plane between the established grade of the streets into which the alley enters.

"Equally untenable is the suggestion that the grade of an alley in a city of the first class can be established by custom or dictum or direction of the city engineer or his subordinates. The establishment of such a grade is a legislative act, and can only be done by ordinance. That the assistant city engineer fixed the grade of the alley for the plaintiffs had no more binding effect upon the city than if plaintiffs had appealed to a mere passing pilgrim, and he had fixed the grade."

The defendant city is not liable in damages resulting from injury to plaintiff's property arising from establishment of an

Did you get yours yet? What?



Why, that new
Sewer Cleaning
booklet of the
Turbine Co.

There is a copy being held out
for you at Milwaukee All
we need is your address . . .

THIS seventy-two page book including dozens of photographs will be sent free of charge to all those interested in sewer cleaning work. The problem of sewer cleaning is one which confronts the people of every city. The Turbine Sewer Cleaning Machine has effectively solved the problem. It makes little difference how severely clogged a sewer may be—the Turbine will clean and scour it and make it like new. Our work is guaranteed—you take no chances.

Turbine Sewer-Machine Co.

195 ELEVENTH ST.

MILWAUKEE, WIS.

alley grade after plaintiffs graded their property with reference to a grade of the alley unauthorizedly fixed by the city engineer. (Missouri Supreme Court, *Castle vs. City of St. Joseph*, 219 *Southwestern Reporter*, 611.)

Supply of Impure Water to Consumers

One who has contracted typhoid fever from water furnished by a city in the operation of a municipal water plant is not entitled to recover damages from the city on a theory of breach of an implied warranty on the part of the city that the water was wholesome. So held the Appellate Division of the New York Supreme Court in the recent case of *Canavan vs. City of Mechanicville*, 180 *New York Supplement*, 62. In the course of its opinion the court says:

"It is the common-law rule that accompanying all sales by a retail dealer of articles of food for immediate use there is an implied warranty that the same is fit for human consumption. * * * An implied warranty of personal property is a collateral contract attending a sale thereof, so that, unless there be a sale with the ordinary circumstances of transfer of title and possession of the thing sold, for a price given for that particular thing, the peculiar facts out of which a warranty is implied do not exist, and there is no warranty. It is therefore necessary, first, to inquire whether there was between these parties, in reference to the water furnished, a transaction of bargain and sale accompanied by the incidents ordinarily attending such a sale as between a tradesman and a customer.

"When water is diverted by a city from rivers, streams, and springs, and is allowed or compelled to flow into storage reservoirs, from which it is again allowed to flow through a network of mains and pipes into the homes, the streets, and buildings of a city, so that the occupants of dwellings are, for a compensation, furnished with a supply of water, it may well be doubted whether the water so furnished is a commodity which is bought and sold. * * * Rather it would seem that this plaintiff, for a compensation paid, enjoyed a right or privilege to make use of water as it passed through his dwelling, conducted in pipes installed by the defendant, precisely as a riparian owner might enjoy the right to take water from an open stream. * * * In the instance of articles of food ordinarily sold, the seller has the physical custody thereof, so that inspection and examination may be had, and the buyer may assume that they are made. Water supplied from a reservoir is never in the actual physical custody of the seller. Every one knows that almost universally all such

water is collected from running streams, rivers or lakes, which are themselves supplied by the drainage of wide areas of land; that such water runs over the earth uncovered to the air, or percolates through soil; that it is collected for distribution in large ponds; that the soil through which or over which it passes cannot minutely be examined; that contamination of the water can be restricted, but not prevented; that inspection alone will not reveal the presence of bacteria; that analyses of the great volume of moving water collected in the ponds cannot be made; that an inspection, an examination, or an analysis of every drop of water furnished is beyond the power of the seller."

Powers of Pennsylvania Cities

A municipality is merely an agency instituted by the state for the purpose of carrying out in detail the objects of government. The Legislature may enlarge or diminish its territorial extent or its functions, or modify its internal arrangement, or destroy its very existence.

Under a law enacted by the Pennsylvania Legislature in 1919, cities of the first class are without power to borrow money for purposes other than capital outlay. The act provides:

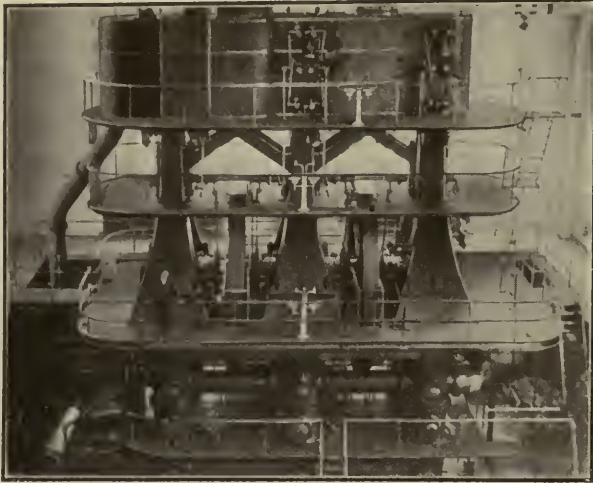
"It shall be lawful for such city to borrow money or incur debt, in accordance with the terms of existing law, for the purpose of acquiring property, erecting buildings, bridges or other structures (but not for the repair of the same), paving streets (but not repaving or repairing the same), or for any other permanent improvements or capital outlay of any kind, provided that all of such proposed expenditures are certified to the city council by the city controller to be capital expenditures as distinguished from current expenses, prior to the authorization of such debt. The certificate of the city controller shall be final and conclusive as to the character of the proposed expenditures. It shall be unlawful for the city to borrow money or incur debt for any purposes other than above specified, except in the case of loans for periods not to exceed one year as provided in this act; provided, however, that if during the preceding year current funds have been used for which it would have been lawful to borrow money as herein provided, and the city controller shall so certify, the current funds may be reimbursed out of the loan funds borrowed for that purpose."

The act is constitutional. (*Pennsylvania Supreme Court, Kraus vs. Philadelphia*, 109 *Atlantic Reporter*, 226.)

Pennsylvania Vehicle Licenses

The provision of the Pennsylvania Borough Code, empowering boroughs to "enact

Attention Water Works Men!



A Bowser Equipped Pumping Station

A
BOWSER
ESTABLISHED 1885

Oil Filtering and
Oil Circulating
System in Your
Plant Will Save
Money : : :

With the present high price of lubricating oil, every drop must be made to do full duty.

To make this possible, it is necessary to install an efficient oil filtering and circulating system.

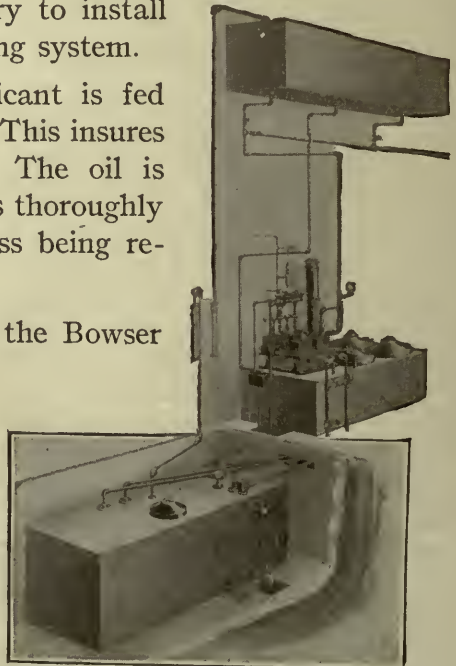
With the Bowser System, the lubricant is fed to bearings in a continuous stream. This insures efficient lubrication at all times. The oil is drained back to the filter where it is thoroughly cleaned and used again, the process being repeated continuously.

Write us for literature explaining the Bowser principle of Oil Filtration.

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SYDNEY: 6 Castlereagh St. A



ordinances establishing reasonable rates of license fees on all vehicles used in carrying persons or property for pay," etc., and an ordinance enacted thereunder, do not apply to use by merchants of vehicles in delivering goods sold to customers. (Washington County, Pa., Court of Common Pleas; Borough of New Eagle vs. Frey; 2 Pennsylvania Municipal Law Reporter, 231.)

Alternative Specifications for Street Work

Specifications for a street improvement in a resolution of intention are not invalid because calling for culverts of iron "or" steel, it not being shown what, if any, difference there will be in cost, or that it will injuriously affect the property owner, or that conditions of the industries producing culverts may not make the alternative necessary in order to prevent unreasonable delay in completing the improvement.

Reaching this conclusion in the case of *Shepherd vs. Chapin*, 188 Pacific Reporter, 571, the California District Court of Appeal said:

"In *Thoits v. Byxbee*, 34 Cal. App. 226, 167, Pac. 166, it was held by this court that the specifications there considered were not invalidated by a provision authorizing the street superintendent to change the proportions of

sand and rock in the concrete, for the reason that it appeared that it would not affect the cost of the work so far as these ingredients were concerned.

"In *Burnham v. Abrahamson*, 21 Cal. App. 248, 131 Pac. 338, where the specifications provided that the cement should be composed in part of hard sandstone, granite, basalt, or other close-grained rock, it was said:

"One or the other kinds of material may be found when the work is commenced not to be as available as the other. Indeed, many contingencies may arise in work of this character which cannot be foreseen, and which could not be met or overcome in the absence of some discretion committed to the superintendent of streets."

Municipal Taxation of Corporations

Although a city may not tax a corporation's right to do business in the city after collecting from it a franchise tax, it may impose a license fee upon such agencies as are not essential in the conduct of its business. An ordinance of a Kentucky city of the fourth class, imposing a license tax on an express company for maintaining an office or agent in the city, is invalid as involving double taxation, where the company has paid a franchise tax. (*Kentucky Court of Appeals, Commonwealth vs. American Railway Express Co.*, 218 Southwestern Reporter, 453.)

On the Calendar of Conventions

JUNE 16-17.—BEMIDJI, MINN.

League of Minnesota Municipalities. Annual convention. Executive Secretary, E. L. Bennett, University of Minnesota, Minneapolis, Minn.

JUNE 16-23.—DES MOINES, IA.

General Federation of Women's Clubs. Biennial convention. Corresponding Secretary, Mrs. Mary I. Wood, Portsmouth, N. H.

JUNE 17-19.—ST. LOUIS, MO.

United States Junior Chamber of Commerce. First annual convention. Secretary, William R. Simmons, Terre Haute, Ind.

JUNE 20-26.—MICHIGAN CITY, IND.

Indiana Commercial Secretaries' Association. Annual convention. Secretary, S. H. McClary, Chamber of Commerce, Terre Haute, Ind.

JUNE 21-23.—VANCOUVER, B. C.

Canadian Public Health Association. Annual meeting. General Secretary, R. D. Defries, M. D., Toronto, Ont.

JUNE 21-25.—ATLANTIC CITY, N. J.

International Association of Rotary Clubs. Annual convention. Secretary, Chesley R. Perry, 910 South Michigan Avenue, Chicago, Ill.

JUNE 21-25.—MONTREAL, QUE.

American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West Seventy-first Street, New York City.

JUNE 22-24.—STROUDSBURG, PA.

Association of Pennsylvania Boroughs. Annual convention. Secretary, J. Herman Knisely, Capitol Building, Harrisburg, Pa.

JUNE 22-25.—PHILADELPHIA, PA.

American Society for Testing Materials. Annual meeting. Assistant Secretary, C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

JUNE 23.—NEW LONDON, CONN.

Mayors' Association of Connecticut. Mid-summer meeting. Secretary, Dr. J. M. Coburn, Norwalk, Conn.

JUNE 29-JULY 2.—WHITE SULPHUR SPRINGS, W. VA.

American Institute of Electrical Engineers. Annual convention. Secretary, F. L. Hutchinson, 33 West Thirty-ninth Street, New York City.

JULY 4-10.—SALT LAKE CITY, UTAH.

National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1400 Massachusetts Avenue, N. W., Washington, D. C.

JULY 6-8.—JAMESTOWN, N. Y.

Conference of Mayors and Other City Officials of the State of New York. Annual conference. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JULY 26-30.—TORONTO, ONT.

International Association of Fire Engineers. Annual convention. Acting Secretary, Stephen E. Hoey, Room 1180, Municipal Building, New York City.

AUGUST 3-7.—ST. THOMAS, ONT.

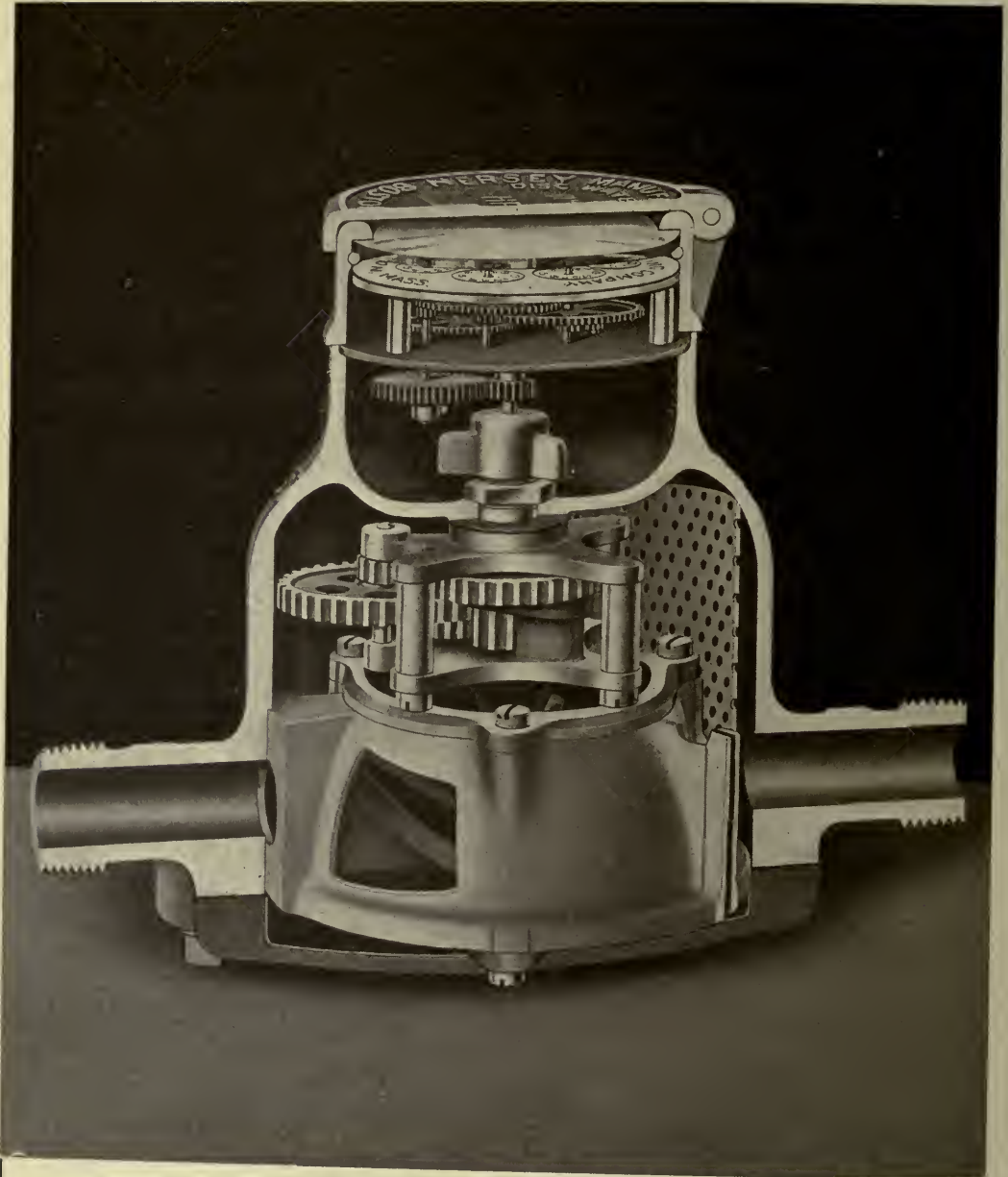
Dominion Association of Fire Chiefs. Annual convention. Secretary, Chief James Armstrong, Kingston, Ont.

AUGUST 10.—PORTLAND, ORE.

American Society of Civil Engineers. Annual convention. Acting Secretary, H. S. Crocker, 33 West 39th Street, New York City.

OCTOBER 12-15.—ST. LOUIS, MO.

American Society of Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, 404 Lincoln Avenue, Valparaiso, Ind.



The Hersey Disc Meter, Model H F, is the product of thirty five years of experience and refinement in the manufacture of Water Meters.

This model in the smaller sizes, together with Model H D in the larger sizes, form a series which excels all Meters of all makes in all those essentials which go toward making up an exceptionally desirable Meter.

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CHICAGO, ILL. 10 So. La Salle Street
ATLANTA, GA. 618 Hurt Building
SAN FRANCISCO, CAL. 742 Market Street

Municipal and Civic Publications

Landscape Architecture.

HENRY VINCENT HUBBARD, Assistant Professor of Landscape Architecture at Harvard University, and THEODORA KIMBALL, Librarian of the School of Landscape Architecture at Harvard University. Harvard University Press, Cambridge, Mass. 1920. 132 pp.

A comprehensive classification scheme for books, plans, photographs, notes and other collected material, with combined alphabetical topic index and list of subject headings. Defining landscape architecture as "the art of fitting land for human use and enjoyment," this classification, which has been in the course of preparation for a number of years, gives a comprehensive system of headings which will prove of value to all who have to file material relating to this subject. The basis is a numerical one, paralleling the Library of Congress classification in such a way that those having access to the material contained in the Library of Congress will feel at home. The general method is that provided in a similar classification published in 1913 on City Planning by the Harvard University Press. The classification is applicable to large or small collections of material and provides for the arrangement of all sorts of published literature. The index to the Landscape Architecture Classification serves also as a selected list of subject headings with cross-references under which catalog cards or index references to notes may be conveniently arranged.

Sanitation for Public Health Nurses.

HIBBERT W. HILL, M. D., Executive Secretary, Minnesota Public Health Association. 1919. viii + 211 pages.

A very interesting and instructive volume for that rapidly increasing class of much-needed public officials, the public health nurses. It contains a concise statement of the general principles of public health and methods of combating various infectious diseases and insuring the cleanliness of food, water and milk, and the prevention of too rapid growth of insect life, with a closing chapter on vital statistics.

Food Inspection and Analysis.

ALBERT E. LEACH, S. B., revised by Andrew L. Winton, Ph. D., formerly Chief of the Chicago Food and Drug Laboratory, Bureau of Chemistry, U. S. Department of Agriculture. Fourth Edition. John Wiley & Sons, Inc., New York. 1920. xix + 1,090. Illustrated.

A book prepared with the requirements of the public analyst connected with the health laboratory kept mainly in view, and containing sufficient of a general nature to well acquaint cooperating officials with the provisions of laws dealing with the suppression of food adulteration in states and municipalities. Close attention is paid to the use of the microscope in food analysis, and a very valuable set of illustrations is given at the end of the book, showing photomicrographs of cereals, legumes, starches, coffee, chicory, cocoa, tea, spices, and other materials.

A National System of Education.

WALTER SCOTT ATHEARN, Director Department of Religious Education and Social Service in Boston University. Given as the Merrick Lectures for 1919. George H. Doran Company, New York. 1920. xi + 132 pp. Diagrams and index.

Starting with the premises that universal education is the only guarantee of democratic government and that the present tendency in American education constitutes a national crisis, this book presents a program which it is thought will overcome many of the weaknesses and dangers in the present situation and offer educational privileges to everybody. Mr. Athearn feels that a national

system is necessary, including the use of Federal funds and the creation of a Secretary of Education in the cabinet. He points out that the benefits of centralized authority must be preserved without destroying local initiative and moral freedom and initiative on the part of the teaching profession. The dangers lying in a system of vocational education which trains one group for industry and another for professional activities are stressed. The idea is further developed that the national public school system must be supplemented by a system of religious schools (Catholic, Protestant and Jewish) paralleling the public schools.

What Is the Eventual Street Cleaning Method?

GEORGE C. DODGE, 501 Fifth Avenue, New York. 1920. Illustrated.

This is a compact and thorough discussion of present and past methods of street cleaning, including the hand patrol, the horse-drawn sweeper, the squeegee, flushing, motor-driven combination machines, vacuum cleaning, and a very general outline of possible effective future methods. The illustrations are to the point and show many types of street-cleaning machines in action.

Tuberculosis and Public Health.

H. HYSLOP THOMSON, M.D., D.P.H., County Medical Officer of Health, County Tuberculosis Officer and School Medical Officer for Hertfordshire, England. Longmans, Green & Co., New York. 1920. xi + 104.

A comprehensive discussion of tuberculosis, including causes, prevention, contra-infection and schemes of treatment. It is written from the point of view of the public health officer rather than from that of the medical practitioner.

Homes for Workmen.

Southern Pine Association, New Orleans, La. 1919. 250 pp. Illustrated.

This book is a presentation of leading examples of industrial community development, with articles by a number of architects and town planners. The illustrations include numerous detailed plans of inexpensive wooden houses, designed to be built and rented at low prices. The book especially treats of industrial community housing, but the articles and illustrations will be of equal utility to other agencies interested in housing problems.

The Science of Highway Traffic Regulation (1899-1920).

WILLIAM PHELPS ENO, formerly Chairman of the Citizens' Street Traffic Committee, New York City. Brentano's, New York. 1920. 100 pp. Illustrated.

"It can be set down as a traffic axiom that familiarity by the public with the general highway traffic regulations is the key to effective and economical traffic management." With this sentence as its text, the manual covers the entire field of street traffic management, discussing street traffic legislation, mechanical signs and guides, the role of the police, special highway traffic regulation, and suggested changes to assist the movement of traffic in particular districts. It includes a bibliography of books, pamphlets, articles and addresses on traffic regulation by the author and by others.

Patrons of Democracy.

DALLAS LORE SHARP, Professor of English, Boston University. The Atlantic Monthly Press, Boston. 1920. ix + 57.

An argument to persuade parents that they should send their children to public rather than private schools, for the sake of the democratic influences and training. It is an expansion of an article which appeared in the *Atlantic Monthly* for November, 1919.



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Trade Associations in New York City.

A classified list of trade and allied associations and publications issued April 1, 1920, by the Chamber of Commerce of the State of New York. 24 pp. The list does not aim to be complete, but to cover the trades upon which the New York Chamber of Commerce has received numerous inquiries, and the trade papers which have been especially brought to the attention of the Chamber's office. (Apply to the Chamber, 65 Liberty Street, New York, N. Y.)

Checking Schedule for Projected School Buildings.

By James O. Betelle, A. I. A., member of the firm of Guilbert & Betelle, Architects, Newark; Lecturer on School Architecture at Teachers College, Columbia University. In his relations with school board members and building committees the author has found that the greatest single difficulty which school boards encounter is due to the fact that they do not know how to start and just what line of procedure to follow. The original copy of the pamphlet was made up of notes based on correct procedure as suggested by him to numbers of school boards. These notes were gradually developed from observation and from actual practice, and were later used in lectures to superintendents of schools and graduate students in school administration. (Published by The Bruce Publishing Company, 354 Milwaukee Street, Milwaukee, Wis.)

The New York Association for Improving the Condition of the Poor.

76th Annual Report of the N. Y. A. I. C. P. for the year ended September 30, 1919. Entitled "Last Year's Work and This Year's Challenge." 133 pp. Illustrated. (Apply to the Association, at 105 East 22d Street, New York City.)

Every Child in School.

A 15-page pamphlet issued by the Children's Bureau of the U. S. Department of Labor. (Children's Year Follow-up Series No. 3; Bureau Publication No. 64), presenting a report on the Back-to-School drive, which was started during Children's Year. It shows the methods and the results of the drive and the work still to be done. The proposed minimum standards for children entering employment are given. (Write to the Children's Bureau, Washington, D. C.)

Concrete Sewers.

Report of the Committee on Concrete Sewers of the American Concrete Institute prepared for the convention of February 16-18, 1920, in Chicago. 18 pp. Submitting "Proposed Standard Specifications for Neolithic Concrete Sewers and Reinforced Concrete Pipe Sewers, and Recommended Rules for Concrete Sewer Designs." Apply to Henry B. Alvord, Secretary, American Concrete Institute, 6 Beacon Street, Boston, Mass.)

The Roads of Baltimore County, Md.

Annual Report of the Baltimore County Roads Engineer for the year ending December 31, 1919. (Address William G. Sucro, Roads Engineer, Towson, Md.)

Municipal Reports

Cincinnati, Ohio.—Annual Report of the Department of Street, Sewer and Catch-Basin Cleaning for the Year 1919. (Apply to Fred Maag, Superintendent of Street Cleaning Department.)

Greenwood, S. C.—Annual Reports of Town Council and Water and Electric Light Plant. Receipts and Disbursements for the Year 1919. (Apply to J. R. Devlin, City Clerk.)

McPherson, Kans.—Sixth Annual Report (Year of 1919) under Commission Form of Government. Photographs and graphic charts. (Apply to Miss Ellen Landstrom, City Clerk.)

Milwaukee, Wis.—Annual Report of the Water Works for the Year Ended December 31, 1919. (Apply to H. P. Bohmann, Superintendent of Water Works and Water Purification.)

Pasadena, Calif.—History of Pasadena's Municipal Light and Power Plant. By C. Wellington Koiner, General Manager and Mechanical-Electrical Engineer. Photographs and graphic charts. (Apply to Mr. Koiner.)

"Why and How is the Playground and Recreation Association of America."

In this 16-page pamphlet Charles Frederick Weller answers the question expressed in the title. The work of the National Physical Education Service, maintained by the Playground and Recreation Association of America, with headquarters at 309 Homer Building, Washington, D. C., is described. It is illustrated with particular effectiveness in the story of the recreation plan developed for one locality in a rural and small-town county. What the Association has done to secure state laws enabling counties, towns and cities to manage locally their recreation agencies is stated, and its work in standardizing boys and girls in physical efficiency, in prescribing and executing courses of action, and in furnishing printed material on the organization and management of community recreation, is explained. (Apply to the Association, at 1 Madison Avenue, New York City.)

Commercial and Industrial Organizations of the United States.

A revision, to November 1, 1919, of the list of interstate, national, international, state, territorial, and local commercial and industrial organizations in the United States, issued by the U. S. Bureau of Foreign and Domestic Commerce. Only those organizations which made reply to the Bureau's request for information have been included. The list is believed to be fairly complete with regard to the active state and national associations. The information includes the classification of the organization and the name of the secretary, and in the case of local bodies, the number of members, the primary purpose of the organization, its income and the month of the annual meeting. All the data given are for 1919, and the population figures are from the latest Census Bureau reports. (Apply to the Superintendent of Documents, Government Printing Office, Washington, D. C.)

How Public Health Is Protected in Toledo.

An elementary study prepared for use in the Toledo public schools and published by the Commission of Publicity and Efficiency April 17, 1920, as a supplement to *The Toledo City Journal*. Quarto. 8 pp. Illustrated. The protection which the city gives to the water-supply and the food supply, what it does to prevent the spread of disease and to eliminate unsanitary conditions, its method of keeping records and statistics, the health work in the schools and in county institutions, and the recreational facilities, are all explained. Space is also given to the work of private health agencies, and the city laws on food, housing, sanitation, keeping of animals, and spitting are summarized. (Apply to the Commission of Publicity and Efficiency.)

The Public School System of Memphis, Tenn.

A report, in seven parts, of a survey made under the direction of the U. S. Commissioner of Education, including the following: Part 1—I. An Industrial and Social Study of Memphis, II. School Organization, Supervision, and Finance, III. The Building Problem; Part 2—I. The Elementary Schools, II. The High Schools; Part 3—Civic Education; Part 4—Science; Part 5—Music; Part 6—Industrial Arts, Home Economics and Gardening; Part 7—Health Work. 1920. (Apply to the Government Printing Office, Washington, D. C.)

Pasadena, Calif.—Fifth Annual Report, Municipal Printing Department, Year Ending June 30, 1919. (Apply to J. P. Randolph, Manager, Municipal Printing Department.)

Toledo, Ohio.—Annual Report, Division of Health, 1919. Published by the Commission of Publicity and Efficiency as a supplement to "The Toledo City Journal." (Apply to the Commission.)

Winston-Salem, N. C.—Third Annual Report of the Department of Health for the Year Ending December 31, 1919. Graphic charts and photographs. (Apply to Miss Annie H. Snyder, Secretary of the Department.)

Newton, Mass.—Annual Report of the Street Commissioner for the year ending December 31, 1919. (Apply to Ella F. Olmstead, Chief Clerk.)

San Diego, Calif.—Annual Report of the Financial Affairs of the City for the year ending December 31, 1919. (Apply to H. L. Moody, City Auditor.)

Estimates of Cost of Proposed Work
Reports on New Improvements
Preparation of Plans
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Dams and Reservoirs
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News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Omaha to Have Clean Water-Mains

The city of Omaha, Nebr., has entered into a contract with the National Water Main Cleaning Company to have all the city's large feeder mains cleaned, from the Minnelusa pumping station in Florence to the stock yards in South Omaha.

The main supply of water for Omaha reaches the city from the pumping station through two mains, one 48 inches and the other 36 inches in diameter, the 48-inch main extending into 24th and Lake Streets. From Lake Street south to the stock yards the main lines are composed of 36-inch, 30-inch and 24-inch, all cast iron pipe.

Upon examining the supply, it was found that should a shut-down of the 48-inch pipe be necessitated from any cause, there would be a likelihood of great shortage of water. The carrying capacity of the 36-inch main was greatly reduced, owing to the growth of scale, which the contractor agreed to remove in such manner that the carrying capacity would be restored to within 5 per cent of that of new pipe as given in Hazen and Williams tables, coefficient 120.

The work of cleaning was started in October, 1919, and before work closed down for the winter the cleaning was completed from the pumping station to 24th and Lake Streets, a distance of approximately four miles.

The method employed in this cleaning was to dig down and uncover the pipe in two places. At the upper end of the line the pipe was opened by cutting out a section about 8 feet in length. The cleaning machine was inserted into a new section of pipe, and this new section was placed in the cut, sleeved and leaded in permanently. At the lower end of the section to be cleaned, which in the above case, was about a mile from the point where the machine was entered, a similar cut was made in the pipe. A 45-degree curve was installed temporarily, and a riser pipe was connected to the curve to carry the wash water, cleanings and cleaning machine out into the street, as shown in the accompanying illustration. After the riser pipe was placed, the pressure from the pumps was turned on back of the machine by opening a valve, and the machine was forced through by water pressure. The cleanings are always kept ahead of the machine by the wash water, which passes the pistons through port holes, opened by the operator to allow a suit-



A WATER-MAIN CLEANING MACHINE JUST AFTER EMERGING FROM A 36-INCH MAIN WHEN OMAHA HAD ITS PIPES CLEANED OUT



A Modern Lighting System

does *not* require separate Lamp Standards as this street scene clearly shows.

Missoula, Montana, is one progressive western city utilizing "ELRECO" Combination Railway and Lighting Poles, which makes separate Lamp Standards unnecessary.

The "ELRECO" Steel Poles support ornamental lighting brackets with modern General Electric Lighting units; also, the span and service wires of the Railway and Lighting Company; keep the streets free and unobstructed from extra Lamp Standards, wooden poles, and a multiplicity of wires, etc.

The usual practice of financing such an installation is to divide the cost between the local Street Railway and Lighting Company, Merchants and the City, making the cost of "WHITE WAY" very reasonable.

What other progressive cities have accomplished is well illustrated in our handsome Catalog "F", sent on request to those interested.

Electric Railway Equipment Company

CINCINNATI, OHIO.

New York Office — 30 Church Street

able amount of such wash water.

The cleaning machine used for this work consists of three sections: the first carries three rings or bands with spring steel cutting blades; the second section consists of three bands carrying spring steel cutting blades and one piston; the third section consists of one piston. The sections are flexibly connected. The two pistons are constructed so that when under water pressure they expand to the full diameter of the pipe. The cutting and scraping blades mounted on the carrying rings would actually fill a pipe $1\frac{1}{2}$ inches larger in diameter. Therefore, when compressed to the diameter of the pipe being cleaned, they exert outward pressure, which is necessary to remove the more tenacious scales. The machine is constructed to revolve slowly, equalizing the wear on the scrapers, which perform their work by moving straight in the direction of the line of the pipe.

The operator also follows the machine as it passes through the line, for he can hear it from the top of the ground.

In the case of the Omaha cleaning there were certain obstacles to be overcome; as, for instance, when the company which built the Omaha plant before the Omaha district bought it, decided to place a 30-inch gate valve in the 36-inch line with reducer and increaser, because it was cheaper than a 36-inch valve. This valve was removed, and a full-size 36-inch valve was placed in the line.

The cleaning of water-mains by the "National Method" is done for two distinct reasons.

1. To restore carrying capacity to that of new pipe and thereby increase fire protection, and also to save coal by reducing friction head in pumping lines.

2. To remove mud and scale from water-mains and thereby remove germs and objectionable foreign matter which may help to make water unfit for domestic use.

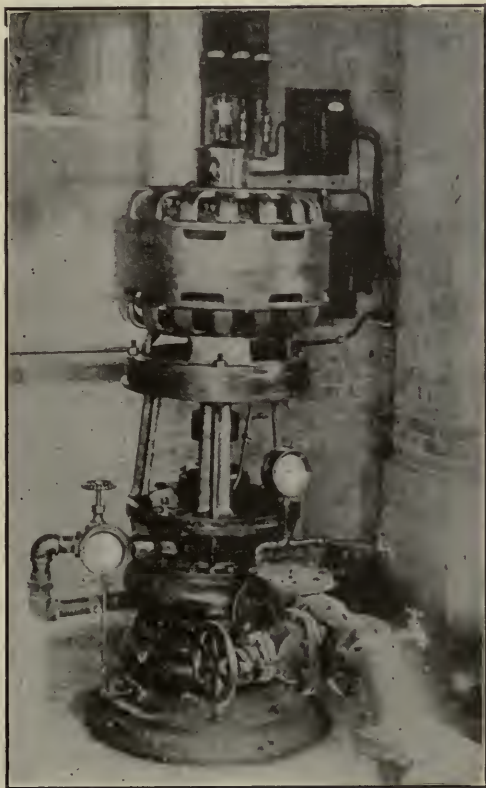
Changes in Kennedy Valve Personnel

The Kennedy Valve Manufacturing Company, Elmira, N. Y., has recently announced the appointment of C. H. Kennedy, formerly New York District Manager, as General Sales Manager, with headquarters at the plant in Elmira, N. Y. Mr. Kennedy's place in the New York office has been taken by J. S. Hanlon, formerly Boston representative, and George W. Waters, formerly in the Sales Department of the New York office, has been made Boston representative. In addition, sales offices have been opened at 208 Mutual Building, Kansas City, Mo., with F. N. Decker in charge. Mr. Decker has for many years been connected with the company at the plant in Elmira.

Economical Pumping Units in Maryville, Tenn.

The city of Maryville, Tenn., is situated

about fifty miles south of Knoxville, and has a population of about 10,000. The water department is the pride of the town, there being 700 services, all metered, and 14 miles of water-main. There are two 12-inch wells 200 feet deep, one of which is pumped by air lift having a capacity of 300 gallons per minute, delivering water into a 100,000-gallon collecting basin. From this basin a 600-gallon-per-minute centrifugal pump forces the water into the main and into a 125,000-gallon tank, located 120 feet above the pump. Added to this equipment is a centrifugal power pump of 1,000-gallons-per-minute capacity against a 125-pound head. About two years ago there was added one No. 8 unit of the Wills pumping system, of which Wirt J. Wills of Memphis, Tenn., is manufacturer and patentee. This pump has a capacity of 430 gallons per minute, pumping direct from the 12-inch well into the main against a 120-foot head. This pump is operating at 50 per cent less cost than the air lift and centrifugal pump because it is more efficient and the water is handled but once. The pump has proved very dependable, according to F. D. Liscomb, Superintendent of Water-Works, as it has never been given any more attention than to fill the oil cups, and start and stop the pumps. Not five cents has been spent on repairs.



THE DEEP-WELL UNIT THAT SUPPLANTED TWO OTHER PUMPS IN MARYVILLE, TENN.

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Is the only drinking fountain made that was designed and is built solely for outdoor use. It does not have to be turned off at the approach of cold weather.

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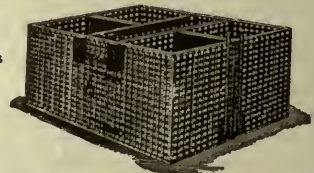
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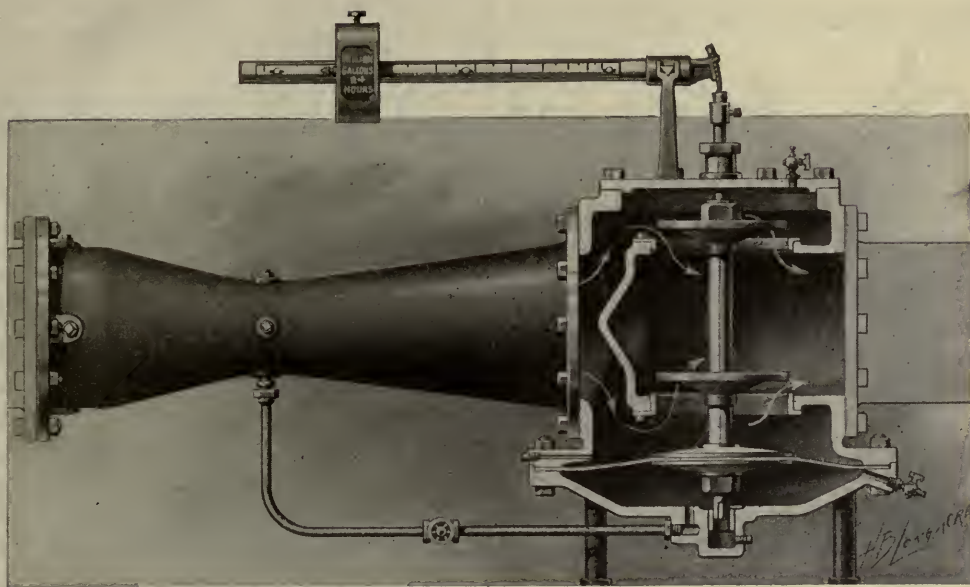


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REGULATING DEVICE FOR CONTROLLING THE RATE OF FLOW FROM MECHANICAL FILTERS

Controlling the Rate of Flow from Filters

In order to secure best operation from mechanical or slow sand filters, the rate of flow must be absolutely controlled at all times and not permitted to fluctuate rapidly, as this is liable to cause breaks in the filtering medium on the surface of the bed. Simplex rate controllers, manufactured by the Simplex Valve and Meter Company, 5722 Race Street, Philadelphia, Pa., have been found very dependable in the 200-odd water filtration plants using them. The controllers range from 3-inch effluent controllers in small units to 20-inch and over on large units in city plants.

The principle of operation, which may be readily followed from the accompanying illustration, is that water first enters the venturi tube and discharges through the balanced valve to the outlet. The controller consists of two members: first, the venturi tube with a discharge flange connected to a valve body; second, the valve body with a double disc type balanced valve. The valve stem is guided in the upper and lower covers, engages a diaphragm near the bottom and has a flexible connection at the top. For any given rate of flow, there is a certain difference in pressure between the body and in the throat of the tube. This is due to the different velocities in these areas. The pressure on top of the diaphragm, being greater than that beneath it, creates a pull that must be balanced by the counterweight on the longer end of the scale beam. It is only a constant rate of flow that will balance the counterweight pull and the diaphragm load.

New Models of Hersey Disc Meters

The Hersey Manufacturing Company, South

Boston, Mass., is celebrating the 35th anniversary of its entrance into the field of the manufacture of water meters by placing on the market two new models of disc meters, namely model HF (frost-protected type) in the smaller sizes and model HD (divided-case type) in the larger sizes. These meters are claimed to possess all the desirable features of this company's models F and D which have contributed to the success and standing of these models among water meters. In addition there have been incorporated certain valuable improvements which are the result of experience. These meters are essentially of the direct-flow type. The water makes the least possible number of turns or changes of direction in passing through the meter, and consequently there is the greatest possible elimination of loss of pressure due to hydraulic friction.

Because of the direction of the flow, the size and shape of the inlet and outlet ports and their relation to each other, there has been produced an almost perfectly self-controlled disc meter, i. e., a meter in which the path of the disc piston does not have to be determined by a mechanical control. This means the elimination of mechanical friction and consequently an increase in accuracy, sensitiveness and durability. These meters are balanced to water pressure so that there are no false strains set up under either static or dynamic conditions. This fact contributes towards the ease of operation.

The interior or working parts "assembly" is cylindrical—it is turned straight on the outside; likewise the cases are bored without taper. The disc chamber has three bearing points, one of which, opposite the outlet port, is faced off under-size, and in this face and in the bearing in the case with which it coincides a key-way is cut. In this key-way is

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Our ornamental lighting system is on the job 24 hours out of every 24. At night it lights up your business streets, residential sections, parks and boulevards. During the day the handsome poles greatly aid in beautifying your city. There is nothing that can make a town more attractive than a neatly laid out system of ornamental street lighting.

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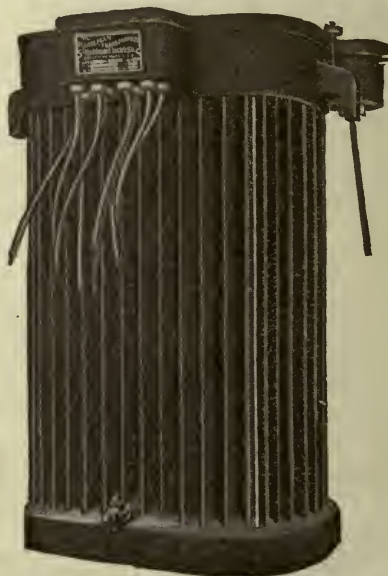
“Wear proof” Signs possess the counter-sunken lettering time will not obliterate. Also, Street Signs, Highway Markers, Semaphore Traffic Signs, Danger Signs, etc.

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EFFICIENT LOW FIRST COST AND
MINIMUM UPKEEP**

**KUHLMAN ELECTRIC CO.
BAY CITY, MICH.**

fitted a curved spring key, the function of which is to keep the interior parts in contact with the case where the outlet ports of the chamber and the case join and to permit the easy removal of the disc chamber by the simple withdrawal of the key. It is not necessary to strike, jar or otherwise abuse these meters in order to remove the working parts. When the key is withdrawn, the working parts are perfectly free. A further advantage of the spring key is that the inside or working parts are free from liability to distortion or other derangement due to any unusual strains which might be set up against the outside case in the process of testing or connecting into a pipe line. The manufacturers claim that these two models form a series which excels meters of all other makes in those essentials which make up an exceptionally desirable meter.

“Movies” to Show Impact of Motor Trucks

“Slow” moving pictures, recently used as unique features of pictorial news weeklies to show every motion of a person in varied sports, have found a field in many lines of industrial experiments that will prove invaluable to future development.

By the use of a new type of camera, whereby exposures are made at the rate of 160 instead of 16 a second, and then projected at one-tenth normal speed, Chief Engineer A. F. Masury of the International Motor Company, has been able to record photographically the comparative road impact and chassis shock of motor trucks shod with pneumatic or solid tires.

Two trucks of similar design were used, one shod with the pneumatics on front and solids on the rear, the other equipped with pneumatics all around. Both were run at a speed of from 15 to 18 miles an hour along a straight stretch and over a sharp incline that caused them to spring into the air and strike ground as from a vertical drop of from 2 to 3 feet.

Newly-invented timing and impact registering devices attached to the camera lens and operated simultaneously, substantiated the results of similar tests recently conducted by experts of The Goodyear Tire & Rubber Company. The solid-tired truck, although 620 pounds lighter, struck ground with a force of 14,336 pounds as compared to the impact of 4,624 pounds for the heavier pneumatic-tired vehicle. The lighter impact of the pneumatically-shod truck was found due to the extra cushioning of the pneumatic tires. The solid tires showed a deflection of but 1 inch as compared to $4\frac{1}{4}$ inches deflection shown by the pneumatics.

The photographic record shows that the pneumatic tires absorbed most of the shock of the vertical drop, the truck leaving the ground only slightly, while the solid-tired truck bounded high after the impact. The recording device showed that the pneumatically equipped

truck hit the ground less than two-thirds as hard as the other, greatly lessening strain on the chassis.

Results from these unique “movie” tests indicate that a $7\frac{1}{2}$ -ton truck on pneumatic tires would do less damage to roads than a 5-ton truck operating at the same speed and under the same rough road conditions.

The Functions of the Water Meter

One of the special features of “Watch Dog” meters, manufactured by the Gamon Meter Company, Newark, N. J., is the large disc and generous proportioning of moving parts, requiring slower movement of the disc in displacing a given amount of water, hence producing less wear and tear on the meter and adding to its life.

“Watch Dog” meters have been found to well fill the requirements and functions of reliable water meters. Meters of the disc or positive displacement type, as manufactured by this company, are claimed to have greater accuracy, simplicity of construction and characteristic durability. Another feature of the “Watch Dog” line is the frost-proof meter, the main casing of which is built of bronze, the walls being extra heavy, to which is bolted a galvanized gray iron bottom of such strength as to withstand ordinary pressure. Any unusual strength, however, such as occurs when the meter freezes, will break this frost-plate, release the mechanism and prevent distortion of the working parts. The measuring chamber of special bronze composition is accurately machined and provided with a three-piece disc, composed of a disc plate and two half-balls made from the highest quality vulcanized rubber obtainable. It is protected against fracture by a thrust roller operating in a channel milled in the measuring chamber wall. This prevents the disc from bearing or riding on the diaphragm or side walls of the chamber, thus reducing friction and retarding the destruction of the disc. In the average water meter one of the most frequent causes for complaint is the development of a leak in the stuffing box, which makes reading the meter difficult, if not impossible, unless the register box is removed. The elimination of this annoyance obviates the necessity of sending a man to inspect a meter “out of order” when the trouble is nothing more than a leak in the stuffing box—a defect which almost anyone can correct. As a solution of this problem, a stuffing box was designed that would become tight automatically; that would find its seat as soon as the pressure was put on. This is accomplished by cutting a rubber plug on an angle of 60 degrees and fitting it into a ground seat. Thus the stuffing box on a “Watch Dog” reaches a perfect adjustment almost as soon as the pressure enters the working parts. The saving thus effected in both time and labor is considerable.

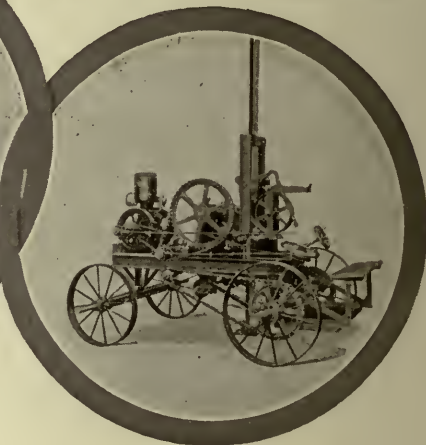
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The purchase of a P & H Trenching Unit is a terse answer to the question of city trenching.

On city streets where work must be done with uniformity, and dispatch, the P & H combination—Excavator, Backfiller, and Tamper—is the logical equipment for the job.

Excavating: steady and fast with none of the irregularity and time consumption of human labor and at a cost that shows big in net savings.

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Real facts and figures on P & H Excavating Equipment are waiting for you, let us give some interesting and valuable data,—send for Bulletin X and Bulletin IX.

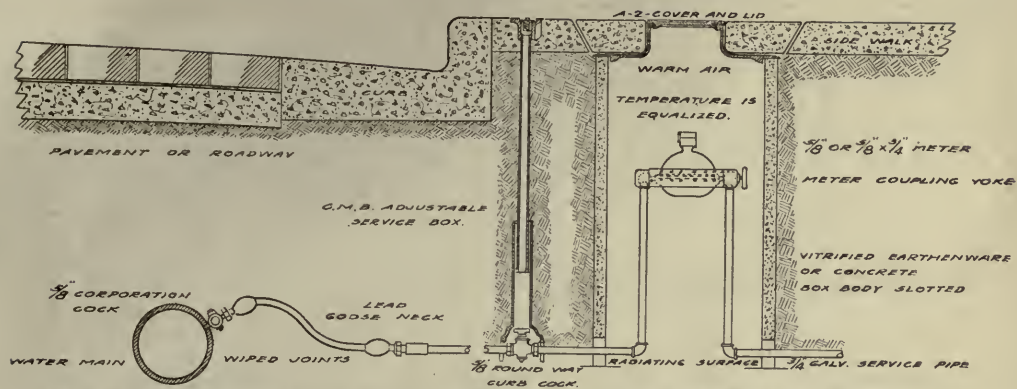
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"You see them wherever you go, and they go wherever you see them"

P&H — excavators — **back-fillers - tampers**



TYPICAL SATISFACTORY LAYOUT OF SERVICE LINE, COMPLETE FROM MAIN THROUGH TO HOUSE, SHOWING CURB AND METER BOXES

Standard Meter Housings

The diagram reproduced herewith shows a system of meter housing which admits of a uniform and systematic setting of meters of all sizes throughout the entire distribution system. It gives a sectional view of an ideal arrangement of a service line complete with meter in a solidly paved street and concrete sidewalks. The concrete covering over the lid, which is a special feature of the manufacturer, the H. W. Clark Company, 130 South Seventeenth Street, Mattoon, Ill., blends readily with the concrete walk, thus preventing any objectionable features in the installation. While retaining the uniformity of lid and locked construction which is featured in this company's meter box, provision is made for access to the meter box through an opening of its full size, by the ready removal of the entire cover and lid with the concrete block which overlies them. This permits of making repairs to the bottom of the box without tearing up the street.



A HOUSING FOR LARGE AND SMALL METERS

The smaller illustration shown gives an idea of how large meters, regardless of size, are installed in Clark meter boxes. The meter "well" is of concrete block wall construction. The blocks may be made on the ground if desired, or the well wall may be built up of brick, or it may be made of solid concrete, using an iron collapsible form. The cover or top is

made of an "adapter" of any size desired, a cover and lid. By changing the size of the "adapter" or cover and lid, all conditions as to size of meter, depth of setting, etc., are efficiently met. A line of heavy covers and lids is designed with an opening sufficiently large for a workman to enter the meter box without digging up the cover. The 20-inch lid has an auxiliary lid through which the meter may be read. Both lids have locking devices which prevent tampering with the meter by unauthorized persons.

Landscape Architects Move

Root, Hollister, Reeves & Harris, formerly located at 159 North State Street, Chicago, Ill., have moved their office to 8 East Huron Street, Chicago, to which address all communications with regard to services of these landscape architects and plant specialists should be addressed.

Interesting Problems of Consulting Engineer

Among the interesting problems now occupying the attention of J. W. Ledoux, 112 North Broad Street, Philadelphia, Pa., are the proposed improvements for the electric light and power station for the city of Jamestown, involving the installation of turbine-driven generators, boiler plant and building extensions, as well as the installation of pumping machinery, additional boiler facilities, air compressors, air lift, and buildings for the municipal water-works. Mr. Ledoux is also arbitrator in the case of the Long Beach Water Company, versus the Long Beach estates, Long Island, N. Y., and is connected with the Clear Springs Water Company rate case, the Norfolk County Water Company, Western New York Water Company, and others. Consulting work for the Wyoming Valley Water Supply Company, in connection with the valuation and establishment of rates and also for the construction of a reservoir and general improvements to the supply, is also occupying considerable time.

W. W. A. C. O. S.

Mr. CHAMBER OF COMMERCE SECRETARY!

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